MONTEZUMA NATIONAL WILDLIFE REFUGE

SENECA FALLS, NEW YORK

ANNUAL NARRATIVE REPORT

CALENDAR YEAR 1987

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEW AND APPROVALS

MONTEZUMA NATIONAL WILDLIFE REFUGE

Seneca Falls, New York

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Calendar Year 1987

Refuge Manager — 02/26/88 Date

Refuge Supervisor Review — 3-4-88 Date

Regional Office Approval — 3/8/88 Date

INTRODUCTION

Montezuma National Wildlife Refuge is located at the north end of Cayuga Lake in the Finger Lakes Region of New York State. The refuge contains 6,432 acres and is situated in Seneca County. The refuge is 35 miles west of Syracuse, 40 miles north of Ithaca, and 45 miles east of Rochester. Montezuma Refuge was established in 1938 for the protection of migratory waterfowl and other waterbirds.

Proposed objectives for the refuge are as follows:

1. Maintain and, when possible, enhance resting, feeding, and nesting habitat for migratory waterfowl and other migratory waterbirds.

2. Provide resting, feeding, and nesting habitats for bald eagles and ospreys (a state-designated endangered species).

3. Within constraints imposed by the two objectives above, efforts shall be made to provide adequate habitat diversification to permit the presence of self-sustaining populations of other life forms that are typical of central New York State.

4. Provide opportunities for public wildlife education and enjoyment when these opportunities are compatible with the above objectives and the reasons for the area's establishment.

Primary habitat types are as follows:

LAND TYPE INVENTORY

LAND CLASSIFICATION	ACRES	% OF TOTAL
Wetland Types:		
Riverine	42	.7
Palustrine	3,600	56.0
Upland Types:		
Grassland	560	8.7
Woodland	2,000	31.1
Brush	170	2.6
Administrative Lands (Bldgs., Parking, Roads, etc.)	60	.9
TOTAL REFUGE ACRES	6,432	100.0

The refuge is a major contributor to Atlantic Flyway waterfowl management objectives. Fall peaks of Canada geese approximate 50,000 birds; in spring, this number has exceeded 100,000. Approximately 15,000 snow geese use the refuge in spring. Late fall use by mallards has annually approached or exceeded 100,000 birds. Use by black ducks in the fall often reaches 25,000. Approximately 1,200 ducks and geese are produced annually.

Use of refuge habitats by other water-related avian species is significant. In part due to the release of 23 bald eagles during the refuge's eagle hacking program in 1976-80, approximately ten bald eagles use the refuge during spring, fall, or summer. One active osprey nest (very rare in the interior of New York State) and an active eagle nest are present. An established black-crowned night-heron rookery exists, and a 114-nest great blue heron rookery continues to grow.

Wildlife education opportunities abound for refuge visitors. Numbers of visitors approximate 200,000 annually. In addition to the visitor center, visitors may drive the 3.5 mile auto tour route or walk dike trails or the Esker Brook Nature Trail. Some 5,000 area school students are annual recipients of formal on-site and off-site wildlife education programs by trained teachers, volunteers, or refuge staff. Many teachers are involved each year in refuge-affiliated workshops.

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A. HIGHLIGHTS

Plans to gravity flow water from Cayuga Lake to Main Pool became temporarily side-tracked while the State of New York and the U.S. Solicitor disagreed over long-term "Use Permits" versus permanent "Easements".

The $50,000 (first year) contaminant study began, but was seriously handicapped by a lack of intra-agency coordination and direction.

Service efforts to minimize impacts of Seneca Meadows Landfill upon the refuge were complicated by major new developments.

Formal agreement was reached with the U.S. Geological Survey to allow them to serve as technical advisors in landfill issues and in implementation of the refuge water plan.

For the first time since 1956, a pair of bald eagles nested and successfully fledged two eagles on the north end of the refuge.

On September 15, the refuge began charging a $2.00 per vehicle entrance fee.

Planning and strategy meetings were initiated with New York State biological and realty personnel regarding state, federal, and private acquisition and "joint" management of 20,000 acres of the so-called Northern Montezuma Wetlands Complex.

The Service, the State, and the New York State Electric and Gas Corporation transferred the refuge's bald eagle nest from its rotten perch onto an adjacent platform on a 75-foot power pole.

B. CLIMATIC CONDITIONS

Weather data are obtained from our weather station, located at refuge headquarters, and also from nearby Locks One and Twenty-five of the New York State Barge Canal System. Yearly average rainfall here is approximately 34 inches, compared to 33.06 in 1987. Average snowfall is approximately 68 inches compared to 61.25 inches in 1987. Total precipitation for 1987 was 33.06 inches compared to the 45-year average of 33.96 inches.

On the whole, the year's weather was unremarkable. The January, 1987 snowfall of 29.5 inches was considerably more than the January 1986 snowfall of 9.9 inches and more than the 17.25 inch 36-year average.

May was unusually dry, with only .5 inches of precipitation compared with 2.65 inches in May of 1986 and a 45-year average of 3.25 inches. June was also dry (.4 inches compared to 6.49 inches in June of 1986 and the 45-year average of 3.17 inches). But, total precipitation of 33.06 inches was about the same as the 45-year average precipitation of 33.96 inches.

It took longer than expected to bring the impoundments to summer levels. However, this did not result in any serious problems.

1987 PRECIPITATION

Month	Snowfall (Inches)	Rain (Inches)	Total Prec. (Inches)	Temp. °F Max	Temp. °F Min	36-Year Average Snowfall	45-Year Average Prec.
January	29.50	.97	3.76	52	0	17.25	2.08
February	6.12	.05	.63	48	-12	16.40	2.27
March	1.13	1.73	2.37	68	8	9.65	2.78
April		2.80	2.80	88	25	2.72	2.12
May		.50	.50	93	34		3.25
June		.40	.40	94	50		3.17
July		6.47	6.47	94	54		3.38
August		3.38	3.38	90	50		3.25
September		5.62	5.62	82	44		2.97
October		2.07	2.07	76	30	2.00	3.21
November	5.25	1.82	2.37	74	14	4.90	3.37
December	19.25	1.21	2.69	54	-2	15.30	2.11
TOTALS	61.25	27.02	33.06	94	-12	68.22	33.96

D. PLANNING

2. Management Plans

The following plans were submitted, approved, or underwent major revisions during 1987:

Plan	Submitted	Revised	Approved
Wildlife Inventory Plan	9/05/86		7/14/87
Part 1 - Refuge Management Plan	8/13/87		
Marsh and Water Plan	9/25/87		
Fur Management Plan:		7/16/87	9/15/87
Hunting Plan		6/19/87	7/14/87

A Marsh and Water Management Plan was originally submitted in May of 1985. It was detailed, comprehensive, and ambitious. It was not approved. It most likely failed because there were just too many opinions of what the refuge objectives should be and how best to achieve those objectives. In the ensuing months, with shifts in priorities and changes of the key players, it became evident that the plan could not merely be edited.

In May of 1987, the decision was made to prepare an entirely new plan that built on the data and experience gained with the first plan. One of the key elements of the new plan is a format that is designed to facilitate revision as developments become more certain. The plan identifies the direction we wish to go in the future without going into so much detail that reviewers get bogged down with the details of multi-million dollar projects that have not even been designed or proposed for funding.

3. Public Participation

February 11 - Hocutt addressed 40 members of the Genesee Ornithological Society regarding the proposed water management plan issues at the refuge. Opinions were requested and noted from the audience. An excellent discussion period followed.

April 22 - Hocutt described the proposed water management program to 25 biologists from the New York State Department of Environ-

mental Conservation. The biologists from Regions 7, 8, and 9 were using the refuge as a site for their annual meeting.

August 17 - Hocutt and Maintenance Mechanic Steve Flanders participated on behalf of the Service at a public meeting in Syracuse, New York, regarding the setting of the 1987-88 waterfowl hunting season (dates/bag limits) in New York State. Our presence was requested by the State.

November 12 - Hocutt addressed 45 members of the Rochester Birding Association to discuss and seek feedback regarding the closure of the refuge to other public access on 3 Saturdays to allow archery hunters greater access to areas formerly off limits to them. The deer problem was outlined in full. The possibility of gun hunting in 1988 was introduced. Feedback was sought for the water plan as it related to shorebirds.

4. Compliance With Environmental and Cultural Resource Mandates

An environmental assessment was prepared for the proposed alternate water supply for Main Pool. The project will involve taking water from the Cayuga-Seneca Canal and constructing a ditch to bring the water from the canal through Unit 17, under Highway 5/20, and into Main Pool. The project "lost some speed", as problems concerning water quality and easements arose.

5. Research and Investigations

On November 20, Hocutt met with Dr. Guy Baldassarre of the State University of New York College of Environmental Science and Forestry at Syracuse. A proposal for 1988-90 McIntyre-Stennis funding resulted, which would provide valuable background data for possible renewed flooding of one or both pools in Unit 17. The work would call for infrared photography of the canopy, core borings, species composition, a full waterfowl census of both pools from ice-out through nesting (to determine existing use), invertebrate production on the forest floor, etc. This study (perhaps to include collection of a few female mallards and wood ducks to determine breeding condition) would follow Frederickson's earlier work with regard to providing very high quality feeding areas mid-March to mid-May for female ducks. The State is also very interested in this study because of severe declines in duck production on nearby wildlife management areas.

Work continued on several studies; four ended, and one new one was added.

Montezuma NR86 - "Energetic Consequences Of Habitat Preferences Of Marsh Roosting Blackbirds And Starlings" (52550-12)

Field work for this study, by Jack P. Hayes, University of California, Riverside, was completed in 1987. As far as we know, the results have not yet been published.

Montezuma NR86 - "Effects Of Underwater Cutting On Survival and Regrowth of Purple Loosestrife" (52550-13)

Anne Marocchini submitted the final report for this study on September 29. The study verified that, at least on a small scale, underwater cutting can control loosestrife. Two years of summer cutting virtually eliminated the plant in most plots, and it did not return the following year. In most cases, dramatic results were obtained after just one cutting. Data on fall cutting were fragmentary, but results were so poor that they did not seem to justify further study within the scope of this project.

We felt that the results of the study were sufficiently conclusive for management purposes and that it was time to shift our resources from studying loosestrife to controlling it.

UNDERWATER CUTTING OF LOOSESTRIFE PLOTS

	5m X 1m			2m X 2m			
Plot:	1S	2S	3S	7M	8M	9M	10M
# Of Stems/Year							
1984	72	19	331	-	-	-	-
1985	6	19	51	21	25	34	63
1986	0	0	0	0	26	1	30
1987	0	0	0	0	2	1	14

Montezuma NR86 - "Large Scale Field Application of Mechanical Controls For Purple Loosestrife" (52550-14)

This study was discontinued this year after approximately 7 acres of purple loosestrife were mowed using the Hockney Underwater Weed Cutter. The study was not able to compare the efficiency of mowing versus the efficiency of chemical control, because Rodeo™ still has not been approved for use in New York State. A total of 24 acres of loosestrife were mowed during the two-year study. Empirical data suggests that underwater mowing reduces loosestrife

stands by about 90%. With yearly mowing, it is possible to "control" loosestrife in 1-3 year old stands that have sufficient water depths to operate the mower.

Montezuma NR86 - "^{13}C,D And ^{14}C In Methane (Production Sampling In Wetlands)" (52550-16)

Dr. Martin Wahler (Wadsworth Center for Laboratories and Research, New York State Department of Health, Albany, New York) continued to use the refuge as one site in a three-year, $700,000 world-wide study of the sources of atmospheric methane. No results are available at this time. The final report is scheduled for November 1988.

Montezuma NR86 - "The Establishment Of Fenced Exclosures To Monitor White-tailed Deer Impacts On Woody Browse Species" (52550-17)

This study was cancelled in April in favor of a browse monitoring program to be designed by Willard Leenhouts, Central Zone Biologist. The two exclosures will remain in place for interpretive purposes.

Montezuma NR87 - "Influenza Viruses and Paramyxoviruses in the Atlantic Flyway" (52550-18)

Since 1977, Dr. Rudolf Deible, M.D. (Director, Virus Laboratories, New York State Department of Health, Albany, New York) has taken cloacal swabs during waterfowl banding operations in central New York. In 1986, he added Montezuma to his collection sites. The swabs are analyzed for the presence of influenza viruses and paramyxoviruses (Newcastle Disease). Portions of his data from 1977 to 1986 were presented this year at the joint meeting of the Northeastern, East New York, and Connecticut Valley Branches of the American Society for Microbiology.

The poster entitled "The Potential Of Waterfowl For Pollution Of Surface Waters" showed that of the 2091 birds tested 5% were positive for paramyxoviruses; 9% were positive for influenza viruses. The presence of viruses does not necessarily indicate pathogenic potential.

Montezuma NR87 - "Monitoring and Surveillance of Environmental Contaminants at Montezuma National Wildlife Refuge" (52550-19)

Because the refuge is close to the Seneca Meadows Landfill, a known site of hazardous wastes, we have long pondered the advisability of conducting "baseline" studies for possible contaminants on the refuge. This year money was available to begin sampling. The refuge, the Ecological Services Field Office, Cortland, New

York, and the Research Center of the State University of New York College at Oswego, New York joined forces to tackle the problem. A variety of coordination problems arose, and we still do not have a final study proposal. In order to have a pigeon hole for the work already begun, we have tentatively labelled the study 52550-19.

During the summer and early fall, samples were collected at 20 sites on or near the refuge. Fish, snapping turtles, benthic invertebrates, algae, sediment, water samples, and water quality indicator data were gathered. The water quality indicator data have been summarized in the draft report "Montezuma National Wildlife Refuge - 1987 Contaminants Study, December 1987". It will be some time before any information on the biological samples will be available. No conclusions have been made concerning the data that have been gathered to date.

E. ADMINISTRATION

Left to Right: 1, 2, 3, 4, 5, 6, 7, 8, 11, 12 (9 and 10 on next page). Staff Photo (87-1; PEB).

PERMANENT PERSONNEL

1. Tracy A. Gingrich.....Biological Technician, GS05, PFT
2. Paul E. Benvenuti.....Refuge Manager, GS11, PFT
3. John R. Phillips.....Refuge Manager, GS07, PFT
4. Melvin J. Norsen.....Maintenance Mechanic, WG09, PFT
5. Grady E. Hocutt.....Refuge Manager, GS12, PFT
6. Nancy J. Estes.....Clerk/Typist, GS03, PPT
7. Judith A. McMahon.....Fiscal Assistant, GS06, PFT
8. Steven L. Flanders.....Maintenance Mechanic, WG10, PFT
9. R. Larry Davis.....Outdoor Recreation Planner, GS09, PFT
   (Transferred to Cape Romain NWR, 6/20/87)
10. Anne M. Marocchini.....Refuge Manager, GS07, PFT
    (Transferred to Pahranagat NWR, 12/5/87)

TEMPORARY PERSONNEL

11. James V. Ellis Jr.....Tractor Operator, WG04, INT
    (EOD 8/24/87)

12. Lawrence M. Kroon.....Recreation Assistant, GS04, TFT
    (EOD 7/8/87)

Larry Davis, Former ORP (87-2; JAM).

Assistant Manager Marocchini aging deer at the refuge's hunter check station. (87-3; PEB)

1. Personnel

The loss of Larry Davis in June caused a ripple effect that reached into all aspects of refuge operation, not just the I & R program. Rather than totally close down the public use program, we used assistant managers and the biological technician to partially fill the gap. This caused shortages in the maintenance operations, because these people had been filling in for the tractor operator position which had been vacant since January 1986 and for the recreation assistant position that was vacant since October 1986. By the time we were able to hire Larry Kroon, recreation assistant, and Jim Ellis, tractor operator, we had built up an uncomfortable backlog of projects that was still not totally resolved at the end of the year. A summary of staff allocations for the last five years is displayed below:

	Permanent			Total
	Full-Time	Part-time	Temporary	FTEs
FY 1988	9	1	2	9.5
FY 1987	9	1	2	10.1
FY 1986	9	1	2	11.4
FY 1985	9	1	2	11.4
FY 1984	8	1	2	11.0

4. Volunteer Program

In 1987, volunteers contributed 2,160 hours of time to the refuge. Because of the volunteers' efforts, refuge staff was able to provide a greater number, diversity, and quality of I & R programs than would have otherwise been possible. During 1987, four meetings were held to coordinate the volunteers' activities. At these meetings, upcoming events were proposed, past activities were discussed, and problems were aired.

Refuge volunteers for 1987 were as follows:

Karen Kelley (5/84 - 12/87)**
Francis Kelley (5/84 - 12/87)**
Robert Hedler (5/85 - 12/87)**
Charlotte Hedler (5/85 - 12/87)**
Polly Keating (10/85 - 12/87)**
Kevin Colton (1/86 - 12/87)*
Jon Robson (6/86 - 6/87)*
Ann Robson (6/86 - 6/87)*
Mark Nicholas (6/86 - 6/87)*
Charlie Rouse *

* Individuals donating time and talent for special program presentations.
**Individuals providing assistance on a regularly scheduled basis.

The volunteers perform many duties on the refuge. Some of the activities that are accomplished are staffing the visitor center on weekends, program and guided walk presentations, and photography of refuge activities. Volunteers also contributed to biological work by assisting in deer and waterfowl censuses.

A special bluebird workshop was held on Saturday, February 28. Volunteer Charlie Rouse discussed the problems associated with bluebirds and their nesting requirements. Afterwards, each participant constructed two nesting boxes; one to be taken home, the other to be used by the refuge. Twenty persons attended the workshop. This was a good example of teachers and other educators "Taking Pride" in wildlife restoration programs.

Twenty persons attended Charlie Rouse's bluebird workshop. (87-4; RLD).

Several individuals also donated their time by giving evening presentations at the refuge. On Wednesday, January 21, Gerry Smith from Derby Hill Bird Observatory, Mexico, New York, presented a one-hour slide presentation to 42 individuals on raptor migration. On March 11, Bob and Charlotte Hedler presented an evening program to 35 persons on spring wildflowers of the area. Dr. Paul Manion, Professor of Forestry, College of Environmental Science and Forestry, the State University of New York, presented a lecture-slide program about the effects of acid rain on various tree

species in New York State. The last lecture was on June 10. Mary Stebbins talked to approximately 40 persons on "Wild and Edible Plants".

5. Funding

The beginning of FY 1987 did not hold much promise for a rosy fiscal picture. As the year drew to a close we were in pretty good shape, having picked up about $7,000 in salary savings and $10,000 in funding for contaminants studies. Unfortunately, the money became available too late to provide the temporary personnel that we needed in spring and early summer.

Aside from the initial uncertainty in Congress, the FY88 budget seems to provide sufficient funds. The staff vacancies that we expect to last through much of the year have helped with our "cash flow" though not with our "staff flow".

	FY 84	FY 85	FY 86	FY 87	FY 88
1260 - O&M; ARMM; Resource Prob.; Fire	$400,226	$506,000	$351,000	$370,173	$439,817
6860 - Expense For Sales	2,000	2,000	2,000	2,000	2,000
8610 - Quarters Rehabilitation	2,000	2,700	3,200	1,800	0
1510 - YCC	20,500	26,000	25,000	0	0
TOTAL	424,726	536,700	381,800	373,973	441,817

6. Safety

Three accident reports were filed during 1987.

Assistant Manager Benvenuti sprained his shoulder while at law enforcement training on March 9 (no time lost).

Assistant Manager Marocchini contacted poison ivy on September 11 (no time lost).

Clerk-Typist Estes re-injured her back while bending to move paper at the computer terminal on June 10. She also re-injured her back in September when she bent over to lock the safe. These injuries resulted in 69 working days being missed.

The safety committee continued its quarterly meetings and inspections and forwarded the minutes to the Regional Office.

Monthly safety meetings were conducted by staff members and included topics such as: boating safety, fire drills, hunter safety, and driving safety.

On August 6, Dr. Lawrence Smith of the Regional Office conducted a formal safety inspection.

7. Technical Assistance

On January 13, Hocutt met in Albany, New York, with the State's Conservation Education Chief Robert Budliger and Anne Harrison-Kravis regarding the "Take Pride" program and the possibility of participation in the program by the New York State Department of Environmental Conservation. The theme was eventually used in some displays and publications.

On January 23, Outdoor Recreation Planner Larry Davis met in Waterloo, New York with and provided assistance about tourism to the Seneca County Industrial Development Board.

On February 13, Hocutt met with Russell Cheney, biological consultant (and a former New York State Department of Environmental Conservation biologist) for Evergreen Farms Preserve, Ltd., (Robert Congel) to discuss the hydrology, loosestrife encroachment, wood duck nest boxes, and vegetative succession at the 1,000-acre private marsh.

February 20 - Hocutt, Benvenuti, and Marocchini met with Dr. Leland Marsh, Chairman of the Biology Department, State University of New York - Oswego. Dr. Marsh offered several helpful suggestions concerning our proposed loosestrife control program.

During March, Hocutt held lengthy telephone discussions twice with Ms. Bonnie Harper of the Minnesota Purple Loosestrife Coalition to discuss strategies for her testimony before the Minnesota State Legislature regarding the Coalition's efforts to (1) label loosestrife a state "noxious" plant, (2) to prevent commerce of the plant, and (3) to seek $800,000 for treatment, research, and control. Most of these goals (except for the monies) were realized during summer, 1987.

On April 6, at the request of Chairman Bob Brower, Hocutt attended a special meeting of the Cayuga County Environmental Management Council (a quasi-government/private citizen advisory group) to respond to charges by Chairman William Jaynes of the Cross Lake Association that the refuge's existence and water management regimen bore major responsibility for flooding of their properties in spring.

On April 9, Hocutt met at the refuge with Assistant Regional Director Don Woodard (Habitat, Boston), Supervisor Paul Hamilton (Ecological Services/Cortland), and Doug Ryan (ES/Cortland) to explain the Seneca Meadows Landfill and its possible effects upon the refuge. Agreement was reached upon the need for contaminants

monies and investigation on the refuge. Hocutt took them for a tour of the landfill.

April 13/14. Hocutt, Benvenuti, Gingrich, Phillips, and Marocchini met with Refuge Central Zone Supervisor Gavutis, Biologist Leenhouts, Bill Hesselton and John Organ (Regional Office/ Federal Aid) and State Wildlife Biologist Bruce Penrod to investigate the status of the refuge's deer herd and its effects upon vegetation. As expected, the State's decision (unannounced) three years earlier to allow the deer herd to dramatically increase (2x in some zones), caused measurable impacts upon refuge vegetation. A number of remedies were offered and discussed.

On April 16, Hocutt met with Cathy Carnes (U.S. Corps of Engineers - Buffalo), and Carl Schwartz, Ecological Services, Cortland, New York, to discuss the hydrologic implications for work being done at Evergreen Farms Preserve, Ltd. Hocutt's cautions were directed specifically at the effects (caused by Evergreen's proposed installation of a 12-inch riser on the Route 31 culvert on Black Creek) upon water availability and quality for 5,000 acres of downstream marshes.

On April 28, at their request, Hocutt met regarding the Seneca Meadows Landfill with William Cool, District Chairman of the Seneca County Soil and Water Conservation District, and District Conservationist Neil LeRoux of the U.S. Soil Conservation Service. Hocutt presented data and explained the landfill's possible (and probable) implications for impacts upon the refuge, Black Brook, near surface and ground water aquifers, and other matters. As their concerns grew, they decided to call a larger public meeting to discuss the matter.

May 17. Benvenuti met with Dr. Charles Smith, Director of the Laboratory of Ornithology at Cornell University, and Peter Crawford of the British Broadcasting Company, regarding use of the refuge as a portion of a filming site in 1988.

June 16. Hocutt assisted in developing the agenda and participated in a public meeting regarding Seneca Meadows Landfill. The meeting was held at the Seneca Falls Board of Education Auditorium. The meeting was sponsored by the Seneca County Soil and Water Conservation District. Participants were the New York State Department of Environmental Conservation, The Seneca County Board of Supervisors, other county planners and officials, and the general public.

June 20, 24. Hocutt met regarding purple loosestrife infestation and biological control with Entomologist Stephen Hight, and with Technicians Pamala Cubbage and Jeannie Yuill from the Beneficial Insects Laboratory, U.S. Department of Agriculture, Beltsville, MD. In addition to photos and discussions, an extensive tour was conducted via airboat and vehicle.

June 29. Hocutt met at the refuge with Chairman John Winkelman of the Village of Skaneateles (New York) Solid Waste Management

Planning Board. The Board was seeking specific information (and recommendations) about the effects of Seneca Meadows Landfill upon nearby aquifers, upon Black Brook, and upon the refuge. Their need for this information was part of their thought processes about separation, recycling, incineration, and other factors for the entire (very affluent) village.

On July 7, Hocutt discussed purple loosestrife and led a morning airboat/vehicle tour of the refuge for Dr. Dieter Schroeder, Principal Entomologist of the Commonwealth Institute of Biological Control, Zurich, Switzerland. Dr. Rich Malecki, Assistant Leader, Cooperative Wildlife Research Unit, Cornell University, accompanied Dr. Schroeder. Dr. Schroeder was at Ithaca to propose and outline his study of biological controls for loosestrife. He described in detail the effects of the five "finalists" (primarily beetle larvae and pupae) upon root systems, stems, and internode spaces of loosestrife. He was very enthusiastic about using Montezuma as one of the first controlled test sites.

July 7. Hocutt conducted an afternoon and evening meeting, slide presentation, and refuge tour for Dr. John Drea, Dr. John Coulson and Stephen Hight, of the Beneficial Insects Laboratory, U.S.D.A., Bettsville, MD. The two senior scientists were in central New York (Cornell University) to discuss biological control programs for purple loosestrife. They hold major responsibilities in implementing (and funding) the biological control plan.

July 24. Hocutt spent the day working with Ms. Debbie Prybyla (U.S. National Park Service) and Dr. Larry Van Druff (College of Environmental Science and Forestry of the State University of New York at Syracuse). The effort was designed to "recertify" the "Montezuma Marsh" as a National Natural Landmark. Ecological changes (since 1972) were recorded and threats to the marsh's integrity were identified and ranked.

July 27, 28, 29. At their request, Hocutt assisted Dr. Larry Van Druff and doctoral student Patricia White at the Huntington Forest Field Research Station (College of Environmental Science and Forestry, the State University of New York at Syracuse) with their attempts to capture hooded and common mergansers by trapping, driving, and nightlighting. Ms. White's study deals with the effects of lake acidification upon both waterfowl species.

August 3-7. As "host" to R5's Project Leaders Conference, which was held at Wells College (Aurora, New York), much of the refuge staff served in a technical support role. The major brunt was carried by Benvenuti and refuge Fiscal Assistant McMahon. Hocutt provided an early morning airboat tour of the refuge for Refuge Chief James Gillette and Chincoteague Manager Dennis Holland.

September 9, 10. Hocutt led a tour of the refuge and held discussions with Solicitor Mark Barash, U.S. Department of the Interior, Boston. The purpose of the visit was to review the controversy between the Service and the New York State Department of Transportation (Barge Canal Division) over the location of the

water transport ditch for transferring water from Cayuga Lake to Main Pool.

On September 9, the refuge hosted a meeting of New York State biologists and acquisition specialists interested in preserving (and in some instances restoring) remaining privately-owned vestiges of the once-vast Montezuma Marsh. Attending the meeting were David O'Dell (Albany), Larry Myers (Region 8 Principle Biologist), David Woodruff (R8 Senior Biologist), and Hocutt and Phillips for the refuge.

During the month of September, Maintenance Mechanic Steve Flanders, assisted by Refuge Volunteer Kevin Colton, conducted three separate sessions of the New York State Waterfowl Identification Course at the refuge Visitor Center. Approximately 35 people were certified at each session.

During October and November, the refuge provided technical assistance to the State in providing sites and access for New York State's involvement in the Padded Jaw Leg Hold Study sponsored by the International Association of Fish and Wildlife Administrators (See Section G.8)

In October and November, the refuge provided technical assistance and other support to the U.S. Geological Survey (Ithaca, New York) and to the Cornell University Department of Agronomy in their efforts to secure Phragmites rhizomes. The plant materials were used in an extensive study of the uptake of heavy metals, nitrates, and phosphates at the outfall settling basins of sewage disposal plants. Heavy equipment was brought in to "scalp" a 700-square meter (12 inches deep) rhizome profile. The soils were hauled to Ithaca in dump trucks provided by cooperating Tompkins County and Township highway departments.

On October 19 and 20, Hocutt and McMahon worked with Allan Klein, a Certified Public Accountant from the Department's Office of Inspector General in the Department's analysis of the efficiencies (and problems) with entrance fees, user fees, and other economic uses in the refuge system.

Hocutt spent considerable time in November and December assisting Dr. Guy Baldassarre in exploring a number of research possibilities at the refuge. Baldassarre, newly appointed head of Wetlands Ecology/Waterfowl Studies at the College of Environmental Science and Forestry of the State University of New York at Syracuse, subsequently submitted a McIntyre-Stennis proposal for an extensive study in Unit 17.

During November and December, the refuge (Hocutt/Gingrich/Flanders) spent much time and effort in technical and public relations support to New York State Bald Eagle Restoration Program Coordinator Peter Nye. This was in conjunction with joint state/federal efforts to secure support of the New York State Electric and Gas Corporation to move the bald eagle nest from its precarious perch onto a more solid platform (See Section G.2).

On November 23, a day-long planning and strategy meeting was held at the refuge visitor center between New York State biological and acquisition personnel and refuge staff regarding the remnant private holdings (some 12,000 acres) in the so-called Northern Montezuma Wetlands Complex. Present were Fish and Wildlife Administrators, Principle Wildlife Biologists, and Senior Wildlife Biologists from Regions 7 and 8, along with acquisition and realty specialists from Albany. Hocutt and Phillips represented the refuge. Hocutt presented the strategy paper that he agreed in September, 1987, to write. A number of basic decisions were made which delineated state interests and federal interests. Also, agreement was reached for a "tripartite" state/private/federal management and preservation strategy.

On December 3, Hocutt met for several hours with Charles Ariss, Scientific Specialist with Idaho National Engineering Laboratory, regarding contaminants studies on the refuge and impacts of contaminants from the Seneca Meadows Landfill upon Black Brook and, eventually, the refuge. INEL is a contractor to the Department to develop a standardized protocol for contaminants studies and remediation efforts throughout the refuge system.

On December 7 and 8, Hocutt attended the 49th Midwest Fish and Wildlife Conference in Milwaukee to give a presentation about purple loosestrife problems and corrective actions in the northeast. Other presentations were given by loosestrife program coordinators from the natural resource agencies in Wisconsin, Minnesota, and Illinois. An excellent informal discussion followed. Approximately 65 persons participated in the session. The upper midwest has unique problems -- large, slow-moving rivers, flat terrain, vast flood plains, frequent floods, etc. Purple loosestrife potentially is an even greater threat there than in the northeast. Widespread application of glyphosate has not been nearly as successful as claimed by some. Aerial spraying is no longer favored in any of the three states. Spot spraying in "new" stands is being extensively used. All three states have enacted legislation (of varying degrees of strictness) making loosestrife a noxious weed, and prohibiting commercial trafficking of loosestrife. There seemed to be some frustration that some NWR's have lost enthusiasm for control efforts (due to lack of money, lack of success, etc., etc.). In all, it was an informative (and sobering) session. The keys seem to be containment, education, spot eradication, and prayers for biological control.

8. Other Items

On July 21 and 22, a marsh and water program evaluation was conducted by Bill Leenhouts, central zone biologist, and Gary Atwell, northern zone biologist. This represented a fairly intensive, and potentially productive, analysis of the complex marsh management problems which have plagued Montezuma for decades. Many of the suggestions were incorporated in the Marsh and Water Management Plan; other proposals are still being debated.

F. HABITAT MANAGEMENT

1. General

With approximately 80% of Montezuma's 6,432 acres being marshland, the primary habitat management objective is to provide feeding and resting areas for migratory waterfowl and other water birds. A secondary objective is to provide nesting areas for a variety of bird species and to create seasonal mudflats for migratory shore birds. To meet these stated objectives, moderate water levels were maintained during migration. Water levels generally declined slightly during the waterfowl nesting season. Over 9.5 miles of dikes were mowed during mid-summer in an effort to maintain succession at a stage suitable for nesting habitat. These dikes represent the majority of the refuge's nesting cover.

2. Wetlands

Water management, with two pools of over 1,200 acres each, continues to be a delicate balance of compromises. This is primarily due to the size of the pools in relationship to the ability to regulate water levels. Other confounding factors are the eutrophication inherent with 50-year old, shallow impoundments, and the invasion of purple loosestrife during the early 1950's. These limiting factors have produced difficulties with water level management that have frustrated efforts to use more innovative management techniques.

Approximately one quarter of a mile of dike on the north end of Main Pool was stabilized and resloped.

Two more small pools with nesting islands were constructed using the John Deere 690C power excavator.

Main Pool

This pool covers approximately 1,200 acres and has been the traditional purple loosestrife stronghold. Again this year, water levels were kept deep enough to retard loosestrife germination, but not so deep as to unduly stress cattails. Approximately 5 acres of loosestrife were mowed with the Hockney Underwater Weed Cutter. This is less than last year because of lower water depths in the area that needed mowing. Additionally, most sparse stands of loosestrife were mowed last year. The remaining older, denser stands of loosestrife are unable to be mowed with our mower. Cattail expansion with the less desirable Typha glauca hybrid has continued in the center of the pool. Water lily was extremely dense along the southeast portion of the pool. Cutting with the Hockney Cutter is very labor-intensive and results are short-lived, but did provide some openings which attracted waterfowl.

Tschache Pool

This pool covers 1,300 acres at the northernmost end of the refuge and is supplied by Black Brook and White Brook.

Water levels were held at or near objective levels throughout the year. Spring flooding of the barge canal system did not overtop our dikes this year, as has happened in previous years. Each year a few more dead snags fall in the pool. The remaining snags are used extensively as perching and nesting sites for great blue herons, ospreys, and bald eagles. The Tschache Pool road was again closed to the public for most of the season so as not to unduly disturb the great blue heron colony, the osprey nest, or the bald eagle nest.

Carp continue to be abundant in the pool. The role these fish play in limiting cattail expansion may be greater than previously thought, and perhaps more significant than muskrat activity.

North Spring Pool

This pool is 118 acres in size and drains into Tschache Pool. Because of the high sulfur and tannic acid levels of this dead timber marsh, there is very little emergent vegetation found here. Purple loosestrife is confined to stumps, fallen decaying logs, hummocks and along the dikes. Several of the stumps and hummocks were used as nesting sites by Canada geese, mallards, and teal. An abundance of duckweed during the autumn months provided a good source of food for migrating waterfowl. Water levels were stable throughout 1987.

South Spring Pool

This 37-acre pool is located directly south of the North Spring Pool and is supplied by several springs. Water from this pool can be diverted into Main Pool or to North Spring Pool. As is true with North Spring Pool, loosestrife is confined to disturbed or exposed areas, such as dikes and rotting tree stumps. Purple loosestrife is less prevalent in South Spring Pool than in North Spring Pool.

May's Point Pool

This 200-acre pool was drawn down both in the spring and fall for the shorebird migration. Green-wing and blue-wing teal were abundant, as were shorebirds, egrets, and great blue herons. The pool was refilled in the late spring when purple loosestrife seedlings were approximately one inch high. The seedlings were quickly killed by the water levels and carp activity.

3. Forests

Approximately 1,800 acres of the refuge are noncommercial woodland, most of which is classified as forested wetland. Dominant tree species include red maple, black ash, green ash, slippery elm, and swamp white oak. No forest management occurred in 1987.

Unit 17, a 600-acre tract of hardwood bottomland in the southern portion of the refuge, was seasonally flooded until 1978. There is significant mammalian activity in this tract, as well as at other water/forest interfaces. During 1985 and 1986, two 25 meter square deer exclosures were erected to help determine whether regeneration is retarded due to browsing by deer or due to other environmental factors.

During the annual browse observations in the spring, we found that the refuge had been heavily browsed during the winter of 1986/87. The winter was a relatively mild one, but the dramatic increase in New York State deer management objective levels has resulted in more deer in this area of central New York. Refuge deer hunting will be increased in magnitude again in 1988.

5. Grasslands

Approximately 560 acres of refuge are classified as grassland and, since 1982, have been divided into several grassland management units (GMUs). The objective of grassland management is to provide increased nesting habitat for waterfowl and ground nesting birds.

Present grassland types are primarily remnant of tame pastures and hayfields. The tall grasses and perennial forbs are representative of early old-field successional stages. Encroachment of woody plants and noxious weeds is minimal at the present time.

During 1987, GMUs were mowed in accordance with the current rotational schedule. Units were mowed in August to avoid the nesting season. Clipping heights were held at 15 cm (6 inches) using rotary and sickle bar mowing attachments.

Unfortunately, nest searches have suggested limited use of the grasslands. Assistant Manager Phillips and Biological Technician Gingrich met with Neil LeRoux of the U.S. Soil Conservation Service and exchanged ideas and possible time frames for methods to increase nesting success. Thoughts are now being consolidated in a revised grassland management plan, and work will begin in spring of 1988. Plans include strip mowing, dense nesting cover plantings, and removing brush from along the pool edges. It remains to be seen if the actions, along with increased predator control, will result in significantly increased waterfowl production.

6. Other Habitats

In addition to the habitats already discussed, there are more than 102 acres classified as rivers, streams, brush and small isolated grassland areas. These areas are not subjected to any habitat manipulation. Several acres of land adjacent to administrative, maintenance, and recreational areas are managed in accordance with their respective uses.

9. Fire Management

No prescribed fires were initiated during 1987. The potential for prescribed burns at Montezuma is severely limited due to the peat soils and the fact that two major highways traverse the refuge, thus making smoke management a real problem.

A cooperative agreement for wildfire and prescribed fires remains in effect with the Magee Volunteer Fire Department, Inc. A blanket purchase order with the department provides for reimbursement of costs associated with structural fires and alarm system responses. They were paid $200.00 for responding to one false alarm on June 15.

No fire equipment was purchased during 1987. We had no wildfires on the refuge.

10. Pest Control

Approximately 5 acres of loosestrife and 5 acres of water lily were mowed during 1987. Chemical control using the herbicide Rodeo™ is still not possible due to delays in the approval process by the New York State Department of Environmental Conservation. New York remains as the only state for which Rodeo™ is not approved. The areas of purple loosestrife that were mowed twice in 1986 showed very little regrowth.

On July 7, Manager Hocutt met with Dr. Dieter Schroeder (Principal Entomologist with the Commonwealth Institute of Biological Control, of Switzerland), Dr. Richard Malecki (Cornell University), and Dr. John Drea, Dr. John Coulson, and Mr. Stephen Hight (Biological Control Division, U.S. Department of Agriculture) to discuss purple loosestrife control using 5 different insects indigenous to Europe (see Section E.7).

Triox™ was the only herbicide used during 1987. It was used to kill weeds around buildings, gates, signs, etc., in order to reduce the amount of time needed for hand trimming.

12. Wilderness and Special Areas

There are two Research Natural Areas on the refuge. Maple Knoll, an 8-acre tract located southwest of Tschache Pool, is the only

beech-maple stand on the refuge. The other RNA, Swamp Woods, is a tract of about 100 acres of black ash, red maple, and some American elm located southwest of Main Pool.

G. WILDLIFE

1. Wildlife Diversity

As in most relatively stable biotic communities, wildlife diversity at Montezuma typically does not vary much from year to year. The wide diversity of habitat types on the refuge, from cattail marsh to upland forest, supports most migratory and resident wildlife species found in central New York. Of note in 1987 were the appearance of several rare or uncommon species on or in the immediate vicinity of the refuge. These included sandhill crane, glaucous gull, cattle egret, glossy ibis, snowy owl, and common loon. In early November, a very rare bird for upstate New York was spotted north of the refuge. The bird was a gray kingbird, and it caused quite a stir in the local birding community. The gray kingbird is normally found along the coast of Florida. The only previous records in New York State were from Long Island.

2. Endangered And Threatened Species

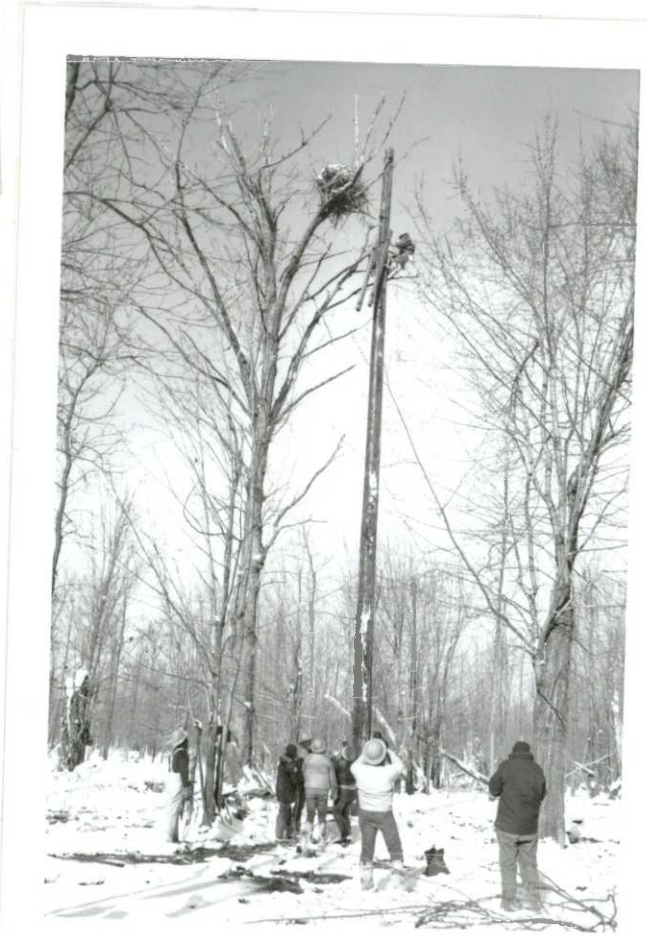
On July 8, a bald eagle nest was discovered on an island at the extreme northernmost edge of the refuge. Two young eagles (approximately 11 weeks of age) were in the nest. Although eagles were known to be "on territory" on the refuge, the nest was actually discovered by a local farmer from an unparalleled vantage point on his property. The final "fix" on the nest tree still required that Peter Nye (Eagle Program Coordinator for the New York State Department of Environmental Conservation) climb some 50 feet into a tree top along the Clyde River.

The two eaglets fledged on July 10 and 11 respectively. Due to their advanced age and the nest's instability, attempts were not made to climb the tree and band the birds. Ms. Lois Bautz, from the Delmar Resource Center, and Michael Allen, of the State's Region 8 office in Avon, New York spent great amounts of time on the refuge and assisted greatly in biological observations and with the numerous media contacts. A joint state and federal news release was issued. Refuge staff were deluged for two weeks with media contacts from throughout central New York State.

The exact identity of the parents of the eaglets could not be absolutely determined. This was because three adult eagles -- a marked male eagle released in 1978 at Montezuma, a second unmarked bird (presumed to be a male), and a marked female bird released in 1982 at the Oak Orchard Wildlife Management Area in western New York State -- had frequented the same areas of the refuge since the summer of 1986.

The bald eagle nest at Montezuma was one of only two successful nests in the entire state during 1987 and represents the first nesting success on the refuge since 1956. Since Montezuma was the site of the nation's first bald eagle hacking program, and considering the contributions that Montezuma birds have made to eagle

A Bombardier pole-setting machine was used by NYSEG's equipment operator to position and set the 75-foot pole. (87-5; KC)



NYSEG employees hoisted "alley-arms" into place in order to position the support platform at the 50-foot level of the pole. (87-6; Kirk Van Zanderbergen, courtesy of NYSEG)

Lineman apprentices attached cross-arms to the "alley-arms" in final preparation for securing the nest to the platform and sawing it free from the tree. (87-7; Kirk Van Zanderbergen, courtesy of NYSEG)

One of the trio of bald eagles that successfully fledged two young on the refuge during 1987. (87-8; PEB)

nesting successes in other areas of the state, it seems somehow very appropriate that some of the birds have finally come home to roost.

In late December, the refuge staff joined forces with the New York State Electric and Gas Corporation (NYSEG) and the New York State Department of Environmental Conservation to stabilize the bald eagle nest. The nest was precariously perched some 50 feet up in a rotten, dead elm tree. A 75-foot pole was installed 6 feet away from the nest and nest tree by means of a large, tracked Bombardier pole-setting machine. A "cradle" was positioned and bolted into place at the 50-foot level of the pole. The nest's supporting limbs were then cut loose and the nest was secured to the new platform.

For the first time since 1984, the osprey pair nesting on Tschache Pool were successful in their attempt. Two young fledged from the nest in late July, ending two frustrating years of blowdowns and just plain bad luck for the ospreys. No serious territorial conflicts were noted between the osprey and their young and the bald eagle pair that nested near Tschache Pool.

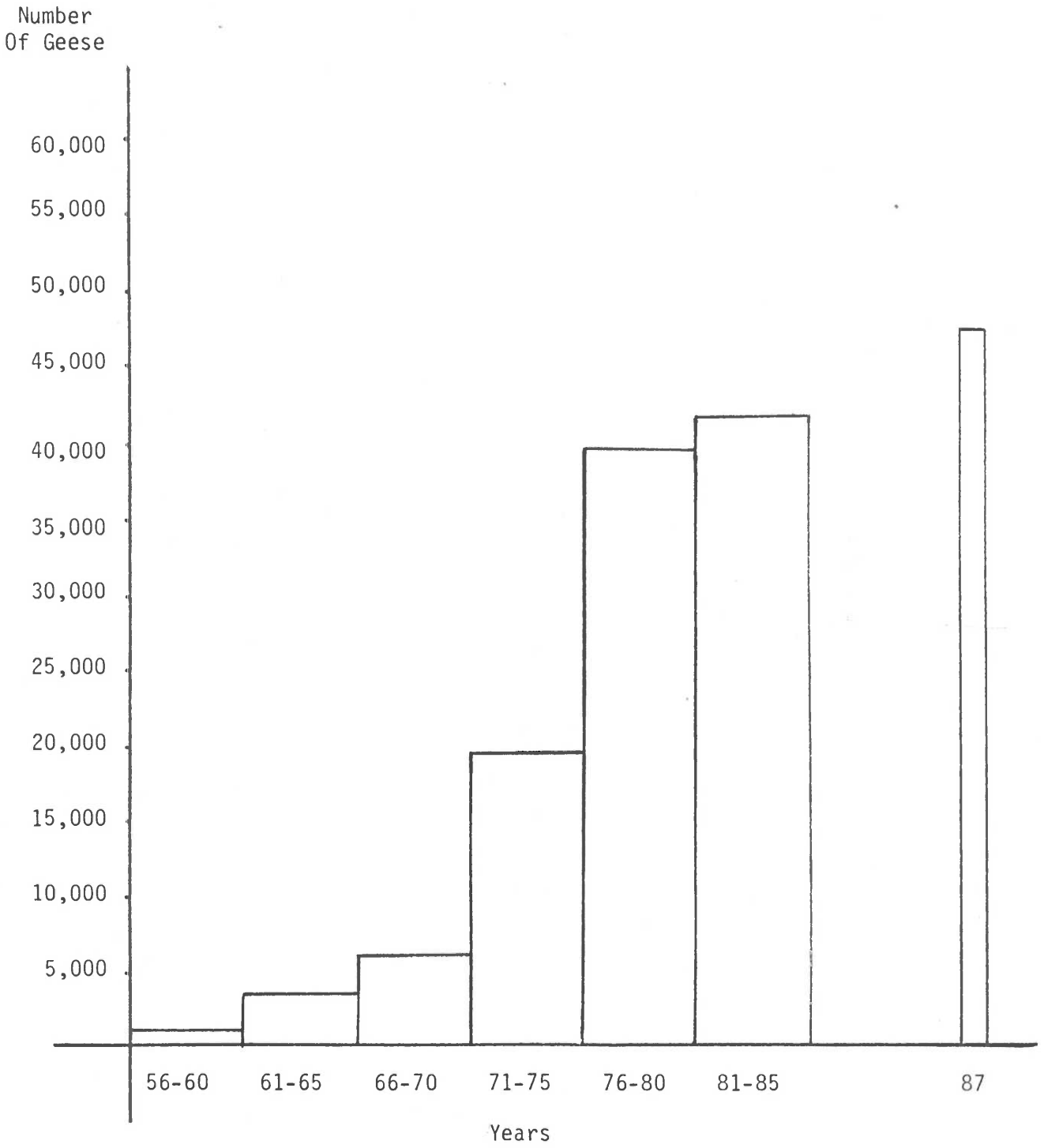
3. Waterfowl

The absence of water or slush on top of the ice covering refuge pools contributed to essentially non-existent waterfowl use during January and February of 1987. Spring migration got underway in earnest during the fourth week of March when the ice covering the refuge pools slowly started to break up. Peak goose numbers for April (also for the spring) were 12,000 snow geese and 55,000 Canada geese. The majority of the birds left the area during the last week of April. An aerial census of Cayuga Lake and adjoining areas was performed by New York State Department of Environmental Conservation personnel on April 9. A total of 133,000 Canada geese were tallied, with over 60,000 on Cayuga Lake and 33,000 on the refuge. The first Canada goose brood was observed on April 29. Spring duck populations peaked at 3,200, a small increase over last year's peak of 3,000.

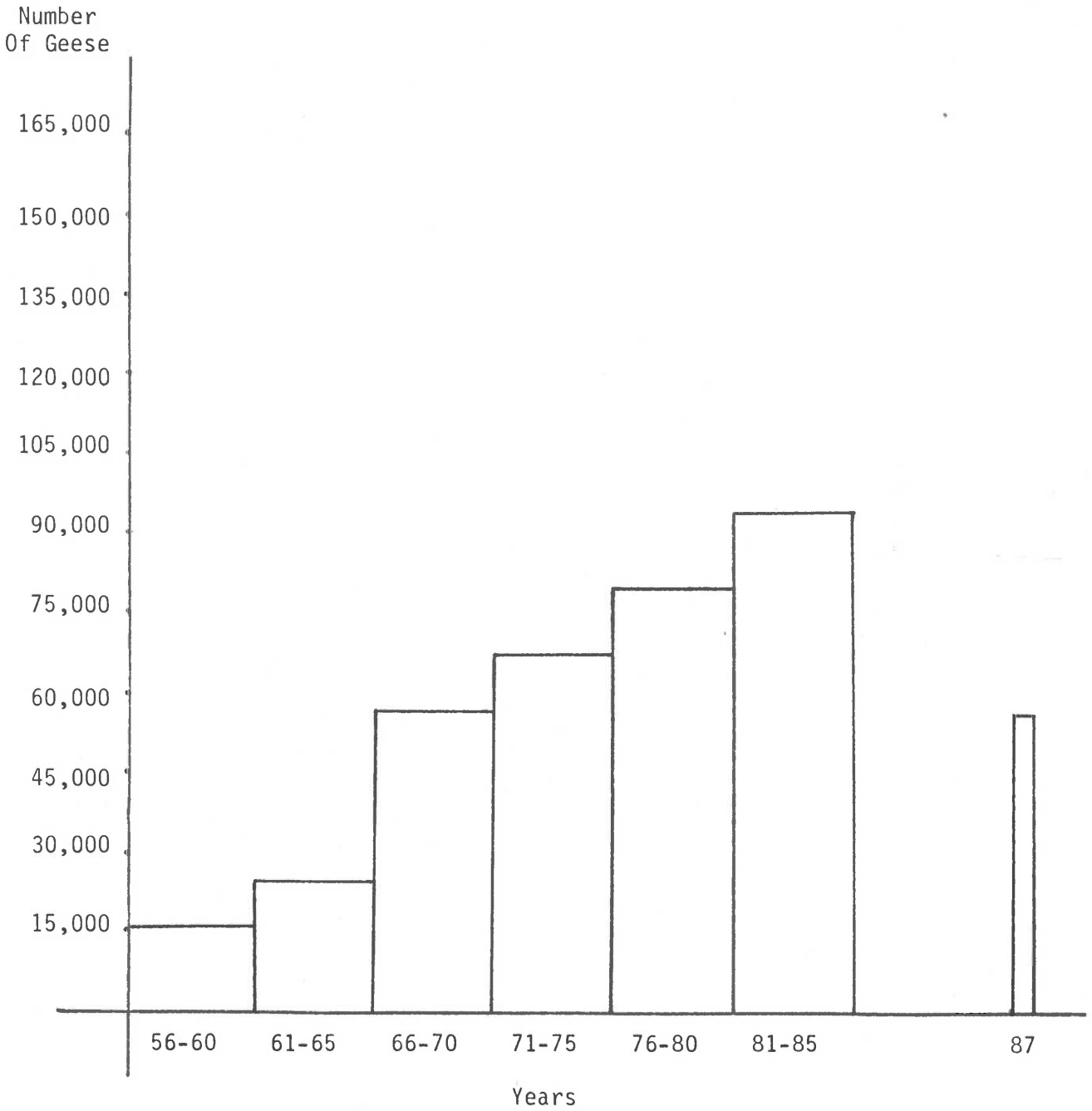
Fall migration descended upon the refuge during the last week of September when approximately 15,000 Canada geese arrived in the area. Waterfowl numbers slowly built up throughout the remainder of the autumn. The fall peak occurred during the last week of November, with 50,000 Canada geese using the refuge. Fall duck numbers peaked during the fourth week of December with over 120,000 birds, a large increase over last year's fall peak of 70,000 ducks.

Canada goose production was down slightly from last year to 222 goslings. Duck production was up in 1987 with the most significant increase occurring in mallard production which more than doubled to a total of 181 ducklings.

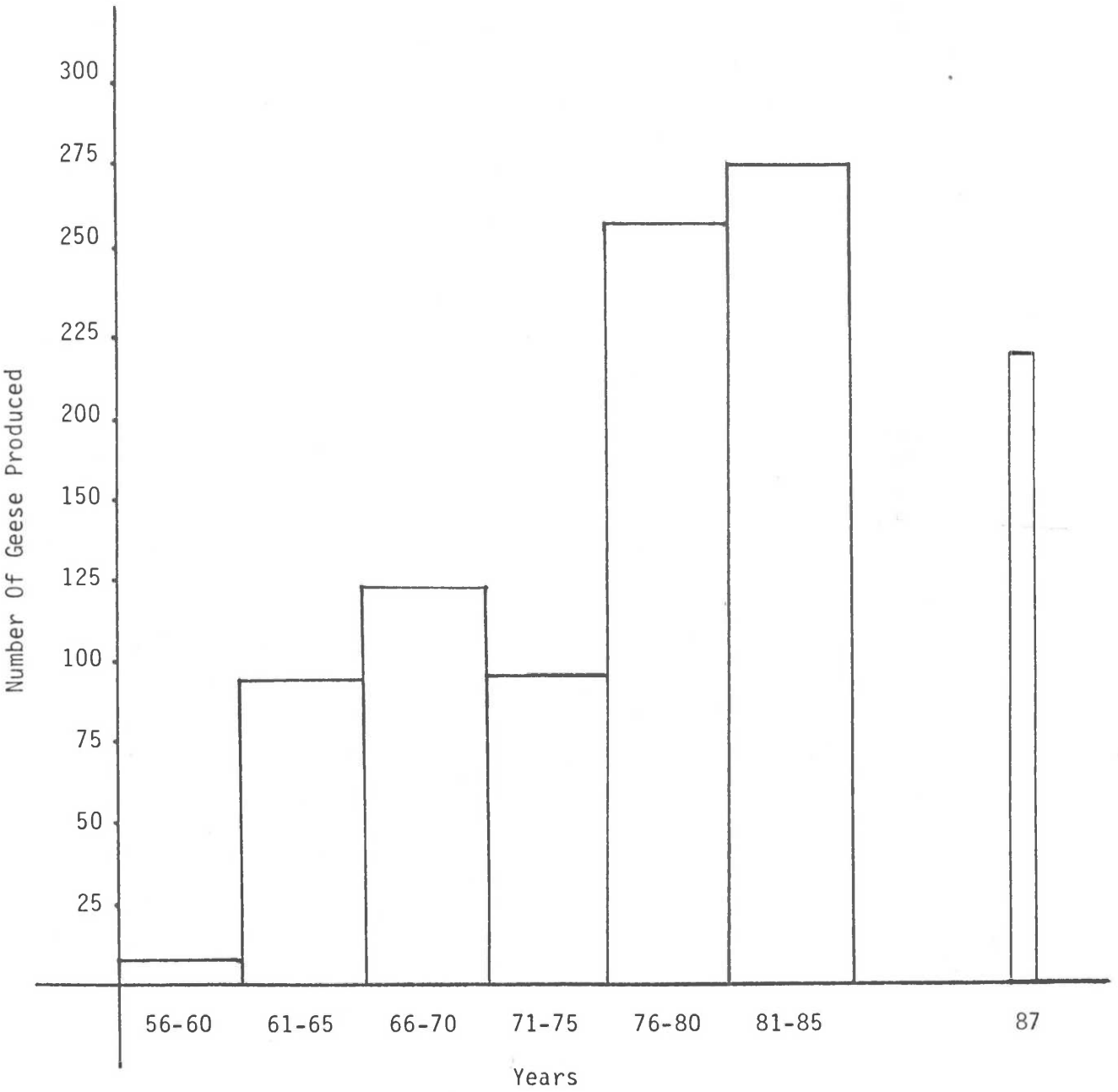
Five-year Means For Fall Peak Canada Goose Populations
At Montezuma NWR Between 1956-1987



Five-year Means For Spring Peak Canada Goose Populations
At Montezuma NWR Between 1956-1987



Five-year Means For Canada Goose Production
At Montezuma NWR Between 1956-1987



The wood duck nest box program at Montezuma has been very successful over the last several years. It has aided us in attaining a fairly accurate estimate of wood duck production. Maintenance Mechanic Flanders has closely monitored the boxes since 1978. He has been instrumental in relocating boxes over the past several years to prevent a potential dump nesting problem. Data are collected in winter for the previous season. Therefore, information on the 1987 season will not be collected until late in January of 1988. In 1986, 85% of the 106 boxes were used. Total production (eggs hatched - dead ducklings) for the 1986 season was 645 ducklings.

4. Marsh and Water Birds

For the sixth consecutive year, great blue herons nested on the refuge. Prior to 1982, when two pair nested in snags on Tschache Pool, this species had not successfully reproduced at Montezuma since the mid-1940's. One hundred and fourteen nests were built this year, with an estimated 285 young being produced.

Four of the 114 great blue heron nests built in the snags on Tschache Pool during 1987. (87-9; PEB)

Black-crowned night herons again nested in the purple loosestrife stands in Main Pool. One common moorhen brood with three young was reported this year. Double-crested cormorants capitalized on the abundant carp and bullhead populations in refuge pools. Although no nesting was in evidence, 50 to 200 birds could be observed on Main and Tschache Pools throughout the late summer and early fall.

5. Shorebirds, Gulls, Terns, and Allied Species

May's Point Pool was drawn down to create mud flats for migrating shorebirds during April and May and again during the months of September and October. The presence of the mud flats attracted large numbers of shorebirds which in turn attracted many dedicated birders to the refuge. Some of the more unusual species observed on the mud flats included: ruddy turnstone, stilt sandpiper, short-billed dowitcher, and both Wilson's and red-necked phalaropes.

One common tern nest was observed on Tschache Pool. Common terns have never nested on the refuge in great numbers, but every year we do have one or two nesting pairs.

The usual large numbers of ring-billed and herring gulls were observed "cleaning up" the winter-killed carp and bullheads after the ice went out during the last week of March.

6. Raptors

Raptor populations remained stable on and in the vicinity of the refuge during 1987. Red-tailed hawks were a common sight on the refuge and there were frequent sightings of kestrels, northern harriers, and great horned owls. A red-tailed hawk nest was found west of the sub-headquarters area this year. Two young fledged from this nest. Two young also fledged from a great horned owl nest that was built in a snag on Tschache Pool. The adult owls didn't seem to "mind" sharing the snag with a pair of great blue herons that also built a nest in the same tree.

7. Other Migratory Birds

A management program for the eastern bluebird began at Montezuma NWR in 1981. Since then, 53 bluebirds have been produced in nest boxes on the refuge. In 1987, one nest box was occupied by eastern bluebirds. The birds successfully fledged four young in late May. Species using the remaining boxes included tree swallows, house wrens, and black-capped chickadees.

In 1988 we plan to install several double boxes to reduce bluebird/tree swallow conflicts and also to conserve cedar posts which are in short supply. We also hope to recruit a volunteer to accomplish the monthly bluebird nest box checks.

8. Game Mammals

The size of the refuge's white-tailed deer herd has remained relatively stable over the past four years. The estimated population is between 200 and 300 animals. The deer are transitory, constantly moving onto and off the refuge on a daily and seasonal basis. The two most important factors affecting deer numbers and movements are farming practices on adjacent agricultural lands and the severity of winter weather.

Throughout the year deer leave the refuge on a daily basis to feed on surrounding farmlands. During occasional severe winters the refuge serves as a "yarding" area for deer from a distance of 8-10 miles. The refuge's 2,000-acre tract of moist hardwood bottomlands exerts a "magnetic pull" on deer from three counties. The deer seek out the thermal protection afforded by the bottomland hardwoods and adjacent cattail marshes. This "quasi-yarding" behavior in severe winters (i.e., 1978-79 and 1979-80) is well-documented by state deer biologists.

During the refuge's 1987 archery deer hunt, refuge staff members (five persons completed the New York State Department of Environmental Conservation Deer Aging Techniques Workshop) staffed a hunter check station in an effort to obtain accurate biological information on deer ages and physical condition. The information collected will enable refuge staff to better project total deer herd size and the overall physical condition of the refuge deer population.

A total of 89 white-tailed deer were harvested by archery hunters during the 45-day refuge season (October 15 through December 12) in 1987. Forty-nine (49) of these deer were examined by refuge personnel at the hunter check station. Information collected from each deer included sex, age, antler beam diameter, total number of antler points, fawn weight, and general physical condition. The sex and age breakdown of the 49 deer examined at the check station is summarized in the table below.

Summary Of Check Station Data For the Archery White-tailed Deer Hunt On The Montezuma National Wildlife Refuge, 1987

	AGE CLASSES				
Sex	Fawns	1 1/2 Years	2 1/2 Years	3 1/2 Years	4 1/2 Years	Number Harvested
Male	6	8	4	1	0	19
Female	5	4	12	4	5	30
TOTAL	11	12	16	5	5	49

Average beam diameter (measured with calipers one inch above the base of the antler burr) for 1 1/2 year old male deer was 17.88 mm, as compared to 17.11 mm last year.

1987 was the second year that the refuge operated a check station for white-tailed deer. It was well received by the participating hunters, who were very interested in the aging procedure. Hunters were anxious to know their deer's age and how it "stacked up" against deer already taken. The entire check station process served as a good public relations tool for the refuge as well as a source of valuable biological information.

1986-87 saw a further decline in the muskrat harvest, and is the lowest harvest since records started being kept in 1943. Five trappers were awarded one unit each. A total of $1,308.00 was collected as a result of sealed bids. The 445 muskrats caught represented a 34% decrease from 1986, and an 87% decline in muskrat harvest over the last 5 years. This is indicative of a trend throughout central New York State. Collected revenue dropped from $1,492.00 in 1986 to $1,308.00 for 1987.

A preseason house count yielded an estimate of 900 muskrats.

Trappers also reported catching 18 raccoons and two red fox during the 1986-87 season.

Implemented for the 1987-88 season were several trapping changes that provided for much more liberalized trapping and hunting of predators. During the first month of the 1987-88 trapping season, 95 raccoons had already been reported taken. Twenty-five of the raccoons were caught by New York State Department of Environmental Conservation biologists as part of a state-wide test using padded traps versus conventional unpadded 1 1/2 double coil traps. Results of this study will be released in 1988.

10. Other Resident Wildlife

Ring-necked pheasant numbers have increased over the last several years. Consecutive mild winters have probably been the most important factor contributing to this increase. During 1987, 2 pheasant broods were observed with a total of 19 young.

14. Scientific Collections

A total of 21 snapping turtles were collected by refuge staff during June of 1987. Tissue samples from the turtles will be analyzed as part of the refuge's contaminants study. A description of the study is provided in Section D-5.

15. Animal Control

Several woodchuck burrows were treated with rodent control cartridges (gas cartridges) during 1987. Control efforts are limited to a few select areas along dikes where woodchuck activities, if left unchecked, would result in structural damage to the dikes. Woodchuck control efforts were also undertaken in the

vicinity of the Esker Brook Nature Trail where the existence of burrows constitutes a safety hazard for refuge visitors.

16. Marking and Banding

The waterfowl banding effort at Montezuma met with mixed results during 1987. The refuge banding quota of 200 mallards was easily met, but only 13 American black ducks (of a total quota of 50) were banded. Again this year, American black duck numbers were quite low on the refuge until well after the end of the pre-season banding period. Several wood ducks and additional mallards were again banded at the request of the New York State Department of Environmental Conservation to assist them in reaching their quotas.

All birds were captured with the three-compartment Montezuma trap. For the second consecutive year, two banding sites were operated. The first trap was placed at the Main Pool site, and a second trap was located at the North Spring Pool banding site. A total of 305 ducks were banded. In addition, 44 birds banded in previous years were captured, recorded, and released.

Several slight changes in trap orientation and site preparation are planned for next year in an effort to increase banding efficiency and success, particularly for American black ducks. The bottom line, though, is you can't band them if they aren't there!

The total take for 1987 was as follows:

	HYM	AHYM	HYF	AHYF	TOTAL
Mallard	47	71	61	69	248
American Black Duck	3	3	6	1	13
Wood Duck	13	12	10	6	41

H. PUBLIC USE

1. General

Interpretation and Recreation (I&R) Programs at Montezuma continued to be of high quality and diversity during 1987. The bulk of programs were presented by refuge staff and the balance of presentations were given by volunteers.

A major recreation-related event at the refuge was the "Taking Pride: Traditional Wildlife Artists of the Northern Finger Lakes" exhibit that visited the refuge for 2 months. The "Taking Pride" display was part of a year-long exhibition giving recognition to local artisans. A open house was held, in conjunction with the exhibit. Over 400 persons viewed the exhibit and had a chance to discuss the works with the respective artists. In addition, two evening programs were given by the artists concerning their art.

Hector Stewart presented a fly-tying demonstration on October 21 for 6 persons. The presentation lasted 2 hours.

Helen Lay Strong presented a passerine bird carving demonstration on November 4. Approximately 12 persons were present for this 1 hour presentation.

During the stay of the "Taking Pride" exhibit, well over 10,000 visitors viewed the display. It was also incorporated into the refuge environmental education program, which allowed viewing for 700 students.

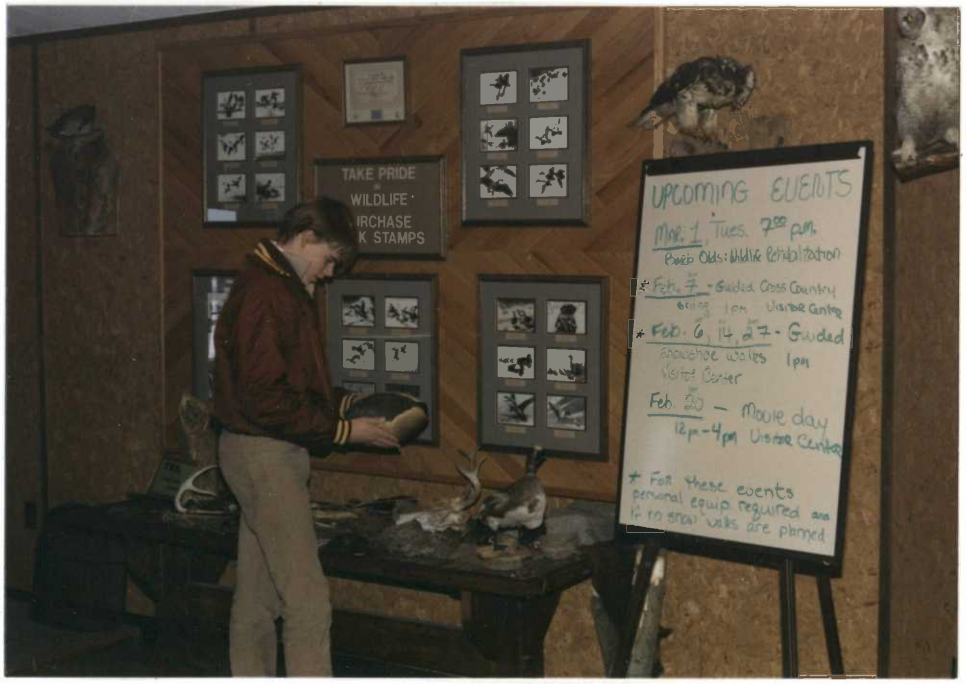
Three new pieces of audio-visual equipment were purchased during 1987. The monitor, video cassette recorder, and VHS camera/ recorder are all Panasonic products and will be used for documenting refuge events and special projects. A majority of the use will be for educational and interpretive purposes.

The monitor is a 25" cable-ready, color unit. This size screen is ideal for showing VHS tapes and programs to small audiences, approximately 5-10 people. The large screen allows easy viewing, and because the picture tube has high resolution, a crisp, clear image is seen.

A VCR capable of random playback was purchased for use in mall and exhibition displays. The unit will automatically and continuously repeat any desired segment of the cassette according to the user's selected beginning and end points. In addition, the machine has a variable speed search dial for quick and accurate program searching.

For a camera/recorder, a model with high speed shutter, automatic date recording, and auto focus was chosen. The high speed shutter is a good feature since many recordings involve wildlife in motion, and this feature yields clearer images. All three devices are compatible and produce a good video product.

The new video equipment allowed small numbers of visitors to view programs without blacking out the entire visitor center. (87-10; PEB)



The visitor center "touch table" remained a favorite with young and old. (87-11; PEB)

Visitation figures for 1987 indicate that approximately 160,000 persons used the refuge. This represents a very significant decrease from the preceding two-year average of almost 220,000. We suspect there are several reasons. First, the old, pneumatic and "electric eye" counters were phased out during the late summer of 1986, and were replaced with more sophisticated electronic "pulse" counters. The 1987 figures are simply more "accurate". Also, the auto tour route was closed during all of February and March, traditionally among the busiest months -- especially the last half of February and all of March. Lastly, on September 15, the refuge began charging $2.00 per vehicle to enter the refuge. Few complaints were received, but it was quite evident from the tire marks that some people would rather not pay. The fee system is responsible for a decline in visitation, but to what extent is hard to determine. We are totally revamping public use data collection techniques in 1988.

MONTHLY VISITATION DURING 1987

January . .	1,445	July	13,300
February. .	5,000	August . . .	17,000
March . . .	15,625	September. .	13,550
April . . .	23,700	October. . .	17,100
May	16,500	November . .	15,000
June. . . .	10,800	December . .	7,000

Fee collecting has added a new dimension of complexity. New demands are created by revenue collection and accounting, law enforcement, and traffic management. During peak times there were as many as ten cars backed up at the entrance.

The fee system generated only $4,500 for two and a half months of operation, compared to a $12,000 start-up cost. With estimated operating and maintenance costs of $13,000, we hope to see a profit in 1988. One aspect which could help increase revenues would be to increase user compliance. Figures indicate that compliance with the refuge fee was 50%, while the national average is 33% for an honor system. Changes need to be made which will allow easier enforcement. Specifically, we (and R5) must be permitted to go to sequentially-numbered envelopes with numbered tear-off tabs. A welcome side effect of the fee system has been increased Duck Stamp sales and Golden Passport issuance.

2. Outdoor Classrooms - Students

Although there was a decline in overall visitation, 1987 saw an increase in environmental education. Three thousand students spent over 6,700 activity hours at Montezuma learning about habitats, endangered species, wildlife identification and biology, and refuge history. One hundred and twenty teachers spent another 350 hours learning about these subjects, as well as how to convey environmental information to their pupils.

The seventy-five environmental education programs presented to students during 1987 generally lasted 2 hours. A more personal and stimulating program could be presented to smaller groups of 20 or so students. These would include sensory and identification exercises, informal discussions, and lab work.

For larger groups, a more generic approach had to be utilized. In these instances, the program generally consisted of a talk by temporary or volunteer refuge personnel, followed by a walk or drive to search for waterfowl or to utilize one of the three educational sites.

The programs utilized a variety of different refuge locations. Eighty-five percent of the environmental education sessions utilized the visitor center at some point during the experience. Ten percent of the programs utilized subheadquarters as the base of operations. Usually when programs were held at subhead-quarters, it was for lab work and field studies. The remaining 5% of environmental education programs were conducted entirely out of doors. Programs were either on the Esker Brook hiking trail or in Unit 17. These walks were generally to exercise the kids and orient them to the out of doors. Programs were presented by a variety of refuge staff and volunteers.

Two other forms of environmental information available to educators are the film loan library and environmental awareness posters. There are over 40 movies and 3 slide shows in the film library that are loaned to educational institutions and groups at no cost. The environmental awareness posters are provided to educators to help stir a sense of appreciation and emotion about the environ-ment in their pupils. The posters are furnished by the New York State Department of Environmental Conservation.

A number of programs were also taken to the students at the school. Davis, Benvenuti, and Kroon spent several days at local schools explaining the role of the refuge and assisting teachers in the environmental education efforts. We have found that this pays dividends in subsequent refuge visits.

Programs were addressed to two classes from the College of Environmental Science and Forestry of the State University of New York. On April 7, Hocutt led a four-hour wildlife seminar and field trip for 35 students. Dr. Larry Van Druff brought 27 students from the same school to the refuge on October 10 as part of an ornithology class field trip. Recreation Assistant Kroon spent one hour discussing the refuge and its avian visitors.

A variety of other programs were hosted by various refuge personnel, both volunteer and paid staff. Twenty-five programs were presented to local Boy and Girl Scout groups in the area. Presentations which were appreciated the most by the scouts were ones leading to merit badges and awards. Another 13 presentations were conducted for senior citizens, AARP, and handicapped groups. These meetings usually entailed the workings of the refuge, and

curious and interesting birds that may be seen on or about the refuge.

3. Outdoor Classrooms - Teachers

Two Project WILD workshops for teachers were held at the refuge. Both were hosted by the New York State Department of Environmental Conservation and lasted over 3 hours. On January 31st, Sue Wolfe presented the 1st workshop, and the second program was on March 28, presented by Laura Carey.

4. Interpretive Foot Trails

Montezuma does not have a true interpretive trail. The refuge does have a very popular two-mile walking trail, the Esker Brook Trail, which is covered under Section H-11.

5. Interpretive Tour Route

The auto tour route continues to be a major attraction, and visitor use figures remained essentially unchanged from 1986. Just under 24,000 vehicles utilized the area, which is calculated to be approximately 72,000 persons.

The tour route is open seasonally. Efforts are not made to remove snow from the route. The 24,000 vehicles represents use during 3/4 of the year. The closure is generally from mid-December until late February or early March.

6. Interpretive Exhibits/Demonstrations

Refuge exhibits continued to educate and stimulate visitors. Due to the ORP leaving in the middle of the year, no new exhibits have been constructed on the refuge. We were fortunate to have the travelling exhibit "Taking Pride: Traditional Artists of the Northern Finger Lakes Region", which was mentioned in Section H.1. It is hoped that a new refuge exhibit will be constructed for the visitor center during 1988.

On several occasions during the year, refuge personnel constructed several off-refuge exhibits. These were:

> January 31 and February 1 - Cayuga Lake Winterfest. A display and diorama combining refuge history and Take Pride was constructed; 7,500 persons attended.
>
> February 4-8 - Great Northeastern Sports Show, Syracuse, New York. Over 20,000 persons viewed the refuge's Take Pride/ Historical Exhibit.

State employees conducted two Project WILD workshops at the refuge visitor center. (87-12; RLD)

Although off-site programs were greatly reduced, we still fulfilled our traditional commitment to the local elementary school during Wildlife Week and Environmental Awareness Week. (87-13; KK).

September 12 & 13 - Sports-A-Rama, Auburn, New York. The System 70 display was set up as an unstaffed exhibit; 1,200 persons attended.

September 26 & 27 - Triphammer Mall, Ithaca, New York. The System 70 exhibit was set up to display "Take Pride" and National Hunting and Fishing Day.

October 22 - Frank Knight School, Seneca Falls, New York. The System 70 was set up as part of their Environmental Awareness Week. During the week, various local persons connected with the environment gave presentations to classes. Benvenuti and Kroon from Montezuma educated over 170 students in "Endangered Species" and "Bits and Pieces".

The program "Bits and Pieces" is an exercise to help students identify animal anatomy and the object's function. The program begins with the objects concealed in a box. The students reach in without looking and try to discover what is in the box. Before the object is taken out of the box, they discuss what it is. Some of the students' ideas are usually quite interesting. Next, they take the object out of the box and discuss the particulars of the object. A buck skull, woodchuck pelt, and turtle shell were some of the objects used for the program.

7. Other Interpretive Programs

This "other" section contains a variety of programs to a variety of groups. The programs generally would be an introduction to the refuge, telling what purpose it serves, how long it has been around, and some of the current strategies we use for wildlife and habitat management. Several tour bus lines in the area use the refuge as one stop on their tours of the Finger Lakes Region. Program presentations were by Davis, Marocchini, Benvenuti, Kroon, Phillips, Gingrich, and volunteers Bob and Charlotte Hedler, Karen and Francis Kelley, and Mark Nicholas. The programs were presented to:

Freedom Baptist Church - 15
Seneca Falls Senior Citizens - 45
Wolcott Retirees - 40
Henrietta Men's Group - 15
UAW Retirees - 80
West Seneca Seniors - 38
Daughters of the American Revolution - 21
Seneca Zoo Society - 18
Environmental Conservation Org. - 6
Binghamton Conservation Center - 30

8. Hunting

The waterfowl hunt at Montezuma attracted 325 hunters in 1987. These hunters reported bagging 543 birds - 397 ducks and 146 geese. The success ratio remained high at 1.7 birds per hunter, and represents the highest success rate since the hunt began in 1968.

Due to lack of interested youths, the Young Waterfowlers Program was cancelled for this year. Hopes are that next year there will be enough interest for this program.

A Non-Resident Waterfowl I.D. Correspondence Course was developed, and nine non-residents were issued cards to hunt at Montezuma.

In response to habitat damage due to higher deer populations in central New York, the refuge archery deer hunting program was expanded during 1987. The hunt was increased to 45 days, including 3 Saturdays and 2 days when all areas of the refuge were open to hunting and closed to other uses. The opening day lottery was increased to allow a maximum of 600 hunters. This was increased from last year's limit of 400 hunters, because more area was available for hunting this year and we had a better idea of the percentage of "no shows". Opening day was first limited in 1986 after it became clear that the number of hunters was exceeding the "safe carrying capacity" of the refuge.

MONTEZUMA ARCHERY DEER HARVEST

	# of Hunter Visits	# of Hunters (60%)	# of Opening Day Hunters	Total Deer Kill	Opening Day Kill	Year Success Rate	Opening Day Success Rate
1987	2,953	1,772	483	89	37	5.0%	7.7%
1986	1,648	989	294	63	25	6.4%	8.5%
1985	1,754	1,052	738	66	53	6.3%	7.2%
1984	2,053	1,232	636	78	50	6.3%	7.9%
1983	2,195	1,317	508	57	35	4.3%	6.9%
					State Average:	5.0%	

Much time, thought, and effort went into this year's hunt. Although it is too early to ascertain what impact the remaining deer will have on refuge browse, plans are underway to further expand the hunt to allow for a 6-day gun hunt during the state season in 1988.

The small game hunt, which runs from mid-December through February, is a minor program and results in very few hunting visits during the harsh winter months. The vast majority of hunters in these parts seek waterfowl and big game rather than squirrels and rabbits.

Night hunting for raccoon and fox, however, has gained increased interest with the recent publicity of the hunt and rising fur prices. Ten permits were issued, by lottery, out of a pool of 35 interested hunters. Each permittee was allowed to invite 2 guests. During 1987, coon hunters spent 152 hunting hours and reported taking 53 raccoons on 15 nights.

9. Fishing

Fishing continued to draw large numbers of sportsmen in 1987; 21,000 persons spent close to 60,000 activity hours trying to

catch brown bullheads, northern pike, crappie, and carp. All age groups utilize the refuge for fishing, and the sport continues to be one the whole family can enjoy.

Refuge policy prohibits fishing in the impoundments. There are three refuge fishing sites and a boat launch that allows access to the waters surrounding Montezuma.

10. Trapping

Please see section G-8 for a discussion of trapping. Our muskrat trapping program is intended to be a habitat management technique and an economic use.

11. Wildlife Observation

This category continues to account for the bulk of visitor activity at Montezuma. Just under 24,000 vehicles travelled the refuge's tour route to view the marsh and wildlife in 1987. During the summer months, many folks abandon their cars in the visitor center parking lot and don hiking shoes to get a more personal view of the refuge. On a much less frequent rate, bicyclists and horseback riders also utilize the road.

May's Point Pool was drawn down for a few months in spring and fall to attract shorebirds. Many birding clubs were quite excited about having a public area for shorebird viewing. Visitors could walk along the 1.5-mile May's Point Dike. This dike is open seasonally. Opening and closing dates vary according to the nesting season.

Another major wildlife observation area on the refuge is Esker Brook Trail. It continued to receive heavy use during 1987. Besides being open to visitors for hiking, the trail was used for wildflower walks, birdwatching, and nature hikes. Volunteers Karen and Francis Kelley and Bob and Charlotte Hedler utilized this area for I & R walks.

Esker Brook has many things to offer the amateur naturalist, whether the event is a group or solo outing. The habitat is varied; several varieties of passerines inhabit the area, white-tailed deer and woodchucks are readily viewable, and over 10 varieties of golden rod are present.

Cross-country skiing and snowshoeing are permitted during the winter months, so the area is truly a multi-season attraction for the refuge. During the year, nearly 20,000 persons spent time treading along Esker Brook's paths.

Proposed projects for Esker Brook Trail are an interpretive brochure, mobility-impaired access to scenic areas, and trail signs for tree species and wildlife activity.

17. Law Enforcement

A few cases, all minor in nature, were pursued either through the state courts or were handled by forfeiture of collateral. Most of these related to the managed waterfowl hunt or deer hunt.

Possession of lead shot	4
Possession of more than 25 shotgun shells	1
Hunting in closed areas	4
Over limit of migratory waterfowl	1
Uncased firearm	1

Several warning letters were also issued.

I. EQUIPMENT AND FACILITIES

1. New Construction

The only significant construction completed this year was the installation of a fee collection station at the main entrance. The project was designed by Mel Norsen, maintenance mechanic, and completed by refuge staff. Excluding staff salaries the project cost $4,900 including $750 for contract removal of two large trees and $2,600 worth of gravel and fill for realigning the road.

2. Rehabilitation

The "old shop" at refuge headquarters underwent substantial rehabilitation during the year. One of the vehicle bays was converted into a paint room for use when we repaint refuge vehicles. While doing the work we discovered that a large portion of the exterior wall had been damaged by ants. After repairing the ant damage, we decided that we might as well reside and repaint the whole building. The entire project was completed by refuge staff for approximately $2,200.

The refuge residence roof was found to be in poor shape. Under a $1,725 contract, roofers stripped and disposed of two layers of old roofing, installed new felt, replaced the edging, and reroofed with 240-pound, 3/1 seal-down shingles.

Smaller projects included pouring concrete walks at the hunter check station and refurbishing the exhibit panels on the visitor center deck.

3. Major Maintenance

The following major maintenance activities were accomplished by refuge staff:

Maintenance Mechanic Flanders created two nesting ponds along the auto tour route. Fill dirt from the excavation, approximately 820 yards, was used to repair a 2,000-foot stretch of dike slope along the pool side of the tour route. The project entailed cleaning the old dike face, hauling fill, leveling and grading. The area was then seeded, fertilized, and topped with mulch paper.

The auto tour route was given a topping of 533 tons of ice control sand which was graded and rolled to provide top binding of the road surface.

A 175-gallon waste oil tank was installed to hold waste oil that will be removed from the refuge periodically by licensed contractors.

The fill and discharge channels of the display pool were cleaned to facilitate water level management within the pool.

A new radio transmission line was installed between the shop and visitor center to replace the damaged one.

The time required to mow dikes and nesting fields this year was reduced by the purchase of a new 15-foot mower deck. Even so, 165 hours were devoted to this never-ending battle.

4. Equipment Utilization and Replacement

Along with scheduled vehicle maintenance, washing and waxing, and safety inspections, the following is a list of major repairs accomplished by refuge staff:

1980 Dodge 4x4 - Replaced the radiator and steering coupler and installed a steering stabilizer.

1982 Dodge D150 - Replaced front shocks, muffler, tailpipe, and A.I.R. pump.

1980 Luv (B) - Replaced the front brake pads, muffler, and tailpipe.

1979 Volare' - Replaced the fuel tank and carburetor.

Ford 531 - Rebuilt the engine head.

The following is a list of new or replacement equipment purchased in 1987:

John Deere 690C, hydraulic excavator with high flotation tracks.

Dodge 1987 Dakota, 4 x 4.

Agway, 20-inch walk-behind lawn mower.

48-inch wide lawn roller.

De Vibiss, 5-horsepower, 2-stage air compressor.

Astro Power, parts washer.

PC's Limited Computer (Section I.6).

Panasonic VCR, color monitor, and camcorder (Section H.1).

A new John Deere hydraulic excavator replaced our 1939 Bucyrus-Erie dragline. (87-14; SLF)

5. Communications Systems

At our request, New York Telephone installed a pay phone outside of the visitor center. The service costs the refuge nothing and does increase visitor safety by providing a method of summoning assistance after working hours.

6. Computer Systems

As was the case with most of the refuges in Region 5, Montezuma received approximately $5,000 worth of new computer equipment. Rather than adding piecemeal to the existing Digital Equipment Corporation's computers that have been in use on some refuges since 1984, the regional office elected to purchase the same equipment for all refuges. The package included:

PC's Limited 286, computer with a 40-megabyte hard disk drive, one 1.2-megabyte floppy disk drive, and a 40-megabyte tape backup.

Mitsubishi XC-1430, color monitor.

Prometheus Promodem 2400G, 2400 baud intelligent modem.

NEC Spinwriter 8850, letter quality printer with a bidirectional tractor feed.

Lotus 1-2-3, spreadsheet software.

Word Perfect, word processing software.

Word Perfect Library, a variety of office management programs (notebook, calendar, calculator, etc.).

Microsoft MS-DOS, disk operating system.

Microsoft GW-BASIC, programming language.

Microstuff Crosstalk XVI, communications software.

Microrim R:base System V, data base software.

ArchiveXL QICstream, tape backup utility software.

One thing that the regional office did not include in the package was someone to setup and test the hardware and install the software. Instead the regional office elected the somewhat cheaper route of using various in-house experts to get the systems operating. Paul Benvenuti was somewhat surprised to discover that he was the"expert" selected to set up the systems for Montezuma and Iroquois. Paul has never had any computer training, but he had worked some with the DEC Rainbow computer and has the good fortune to be married to a high school math teacher who has occasionally taught elementary programming.

None of this, however, prepared him for the 50 pounds of manuals that came with the package. Fortunately the manuals, though lengthy, were reasonably clear. By the end of the year everything except Library and R:base V had been installed.

7. Energy Conservation

Double-glazed replacement windows were installed in the public restrooms.

J. OTHER ITEMS

2. Other Economic Uses

One permit was issued for commercial carp fishing. The fish are actually removed from the adjacent canals (state waters) as they try to swim through our control structures to the pools to spawn. We consider it appropriate to charge a small fee for using our water control structures as fish traps. Fishing conditions were fairly good this year, and the service received $1,329.00 ($.03 per pound for 44,300 pounds).

Commercial fishermen trapped 44,300 pounds of carp at refuge water control structures. (87-15; SLF)

Our single beekeeping permittee sold his hives, so he and the new owner split the $40.00 annual permit fee.

Trapping generated $1,308.00 as a result of bidding from five trappers.

3. Items of Interest

1987 was a year of profound developments in the involvement of the refuge with the Seneca Meadows Landfill, and the permitting of the facility by the State of New York. The landfill, the second largest in the state (650,000 tons per year), is located approximately seven miles upstream of the refuge. The landfill is

bisected by Black Brook, the refuge's major water source. The brook is almost 90% "improved", which makes it a "straight pipe" during major flushing periods. The brook empties into Tschache Pool directly underneath the eagle hacking platform on Clark's Ridge. Opened in 1956, a portion of the landfill is a Phase II "Superfund" site. It is known to contain over 163,000 tons of toxic and hazardous industrial waste.

Landfill developments in 1987 included the following:

- DiMino Construction Company (Rochester, New York), the parent organization, purchased complete farms and other tracts which totalled 648 acres.

- Two formal proposals -- a 40-foot "lift" (vertical expansion) over two-thirds of the existing site and expansion into the 100-acre former Klionsky site -- were submitted to the State (and to the Service for formal comment).

- The Service, somewhat to the chagrin of the State and the landfill, began referring to the landfill as the "Regional" landfill. By year's end, most parties had moved to this designator.

- The complexity of the issue was such that Hocutt was required to attend a great number of meetings in 1987 with State agencies, other federal agencies, landfill consultants, private organizations, and others.

- Hocutt worked closely in private and public meetings with members of the Seneca County Board of Supervisors, the Seneca County Planning Board, and the Seneca County Soil and Water Conservation District. By year's end, the various government and quasi-government agencies passed resolutions which made the refuge's welfare matters of direct concern to those agencies.

- Formal agreement was reached with the U.S. Geological Survey (Ithaca and Albany) to allow Survey hydrologists to serve as formal consultants and advisors to the Service in landfill issues relating to hydrology, sedimentation, and related topics.

- Dr. Ron Scrudato, Director of the Research Center of the State University of New York College at Oswego, and several of his colleagues at the Center, maintained their level of technical support to the Service.

- The State University of New York College at Oswego secured grants (from the New York State Energy Research and Development Authority) to study leachate recirculation and methane production as an energy source. Initially opposed by the State, but favored by the Service, this research will provide absent data about refuse mass stabilization and projec-

ted leachate generation curves -- essential for post-closure planning and setting escrow account limits.

- The three-county incinerator proposal was mothballed, in part because it was directly upwind of the refuge and would conflict with provisions of the endangered species act. This gave even greater dominance to the landfill's position as central New York's regional site.

So, the Service is committed for a long time, since Black Brook still bisects (and drains) the site and flows into the refuge. The landfill will not close by 1992, nor probably by 2012! If anything, the refuge's role will become more politically sensitive, and certainly more complex. Our role should now become more technical than strategic. If anything, the stakes are higher than before. Positively, a vastly increased number of citizens' groups, organizations, and governmental bodies are now firmly in concert with Service concerns -- we just "got there" first. Perhaps this is where the title "refuse manager" originated!

As stated earlier, agreement was reached with the U.S. Geological Survey which will allow them to formally serve as advisors (and participate in meetings as such) to the Service in technical matters relating to hydrology and sedimentation. This is possible under the "Memorandum of Understanding" which governs the Black Brook Gage Station that the Service annually pays the Survey to maintain and to collect, interpret, and print the data. This extension of the original agreement promises great returns for the Service as it reviews technical data for the Seneca Meadows Landfill, and also as the refuge moves toward implementation of the far-reaching water management plan.

On September 23, Hocutt provided an airboat and vehicular tour of the refuge for Congressman Frank Horton's key assistants, Ms. Ruby May, Washington, D.C. Administrative Assistant, and Donald Upsom, former Executive Assistant. Don has just been elevated to the position of senior staff assistant on the Government Operations Committee, of which Mr. Horton is the Ranking Republican Member.

In mid-summer, Hocutt declined with regrets a request that he become Chairman of the Cayuga County Environmental Management Council, a quasi-governmental planning and advisory group.

Training in 1987 included:

Benvenuti -	"Law Enforcement In-Service Training", Eastern Shore NWR, 3/9/87 - 3/13/87 (40 hours).
	"Motorized Equipment Operation" Certification, Montezuma NWR, 5/13/87 (8 hours).

"Retirement Briefing" Workshop, Mill Hall, PA, 6/18/87 (8 hours).

"Firearms Qualification", Canandaigua, NY, 9/29/87 (8 hours).

Davis -

"Refresher First Aid Training", Montezuma NWR, 2/2/87 (8 hours).

"Law Enforcement In-Service Training", Quincy, Florida, 5/4/87 - 5/8/87 (40 hours).

Flanders -

"Refresher First Aid Training", Montezuma NWR, 2/2/87 (8 hours).

"Law Enforcement In-Service Training", Eastern Shore NWR, 3/9/87 - 3/13/87 (40 hours).

"Retirement Briefing" Workshop, Iroquois NWR, 7/01/87 (8 hours).

"Firearms Qualification", Canandaigua, NY, 9/29/87 (8 hours).

Gingrich -

"Refresher First Aid Training", Montezuma NWR, 2/2/87 (8 hours).

"Basic Fire Training", Wallops Island, 2/23/87 - 2/27/87 (40 hours).

"Motorized Equipment Operation" Certification, Montezuma NWR, 5/13/87 (8 hours).

"Retirement Briefing" Workshop, Iroquois NWR, 7/01/87 (8 hours).

Hocutt -

"Take Pride and Project Leaders' Conference", Regional Office, 1/28/87 - 1/29/87 (16 hours).

"Entrance Fees" Meeting, Regional Office, 3/3/87 - 3/4/87 (12 hours).

"Refuge Academy Advanced Session", Central Office, 3/9/87 - 3/26/87 (112 hours).

Marocchini - "Refresher First Aid Training", Montezuma NWR, 2/2/87 (8 hours).

"Basic Refuge Manager Training Academy", Blair, NE, 4/21/87 - 5/15/87 (112 hours).

"Deer Management Symposium", Warren, PA, 6/15/87 - 6/17/87 (24 hours).

"Retirement Briefing", Iroquois NWR, 7/1/87 (8 hours).

"Image and Communications Skills For Women", Rochester, NY, 9/30/87 (8 hours).

McMahon - "Refresher First Aid Training", Montezuma NWR, 2/2/87 (8 hours).

"Administrative Workshop", Portland, ME, 5/11/87 - 5/15/87 (40 hours).

"Retirement Briefing", Iroquois NWR, 6/30/87 (8 hours).

"Leadership and Supervisory Skills For Women", Rochester, NY, 8/14/87 (8 hours).

Norsen - "Refresher First Aid Training", Montezuma NWR, 2/2/87 (8 hours).

"Motorized Equipment Operation" Certification, Montezuma NWR, 5/13/87 (8 hours).

Phillips - "Refresher First Aid Training", Montezuma NWR, 2/2/87 (8 hours).

"Law Enforcement In-Service Training", Eastern Shore NWR, 4/6/87 - 4/10/87 (40 hours).

"Deer Management Symposium", Warren, PA, 6/15/87 - 6/17/87 (24 hours).

"Retirement Briefing", Iroquois NWR, 6/30/87 (8 hours).

"Firearms Qualification", Canandaigua, NY, 9/29/87 (8 hours).

Courses Taught:

Assistant Refuge Manager Benvenuti taught the refresher first aid training to refuge personnel on 2/2/87.

Maintenance Mechanic Flanders taught the Tractor Training Course to Region 5 employees during the period 4/27/87 - 5/8/87. The course was held at Eastern Shore NWR.

4. Credits

Typing - Estes
Climatic Conditions - Norsen
Planning - Benvenuti, Hocutt
Administration - Benvenuti, Hocutt, Phillips, McMahon,
Habitat Management - Phillips
Wildlife - Phillips, Gingrich
Public Use - Kroon, Phillips
Equipment and Facilities - Benvenuti, Norsen, Flanders
Other Items - Hocutt, McMahon
Feedback and Editing - Hocutt

MONTEZUMA National Wildlife Refuge

For further information contact:

Refuge Manager
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Telephone: (315) 568-5987

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U. S. administration.

prepared by
DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

MAY 1984

MONTEZUMA

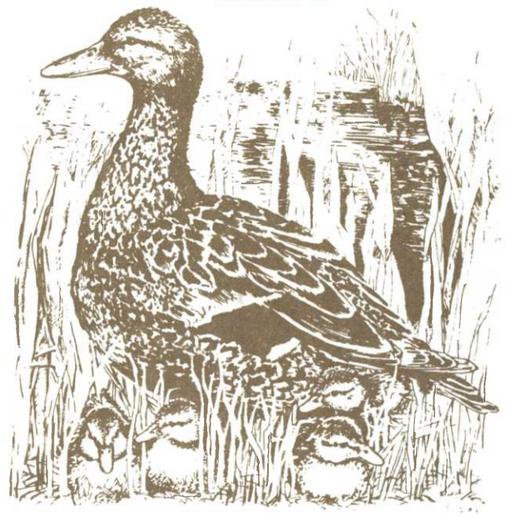
National Wildlife Refuge

MONTEZUMA
National Wildlife Refuge


Canada Goose


Red-Tailed Hawk


Muskrat


Mallard


Great Blue Heron


Red-Winged Blackbird

INTRODUCTION

Montezuma National Wildlife Refuge is located at the north end of Cayuga Lake, in the Finger Lakes Region of New York.

Before 1900 the Montezuma Marsh extended north from Cayuga Lake for 12 miles and was up to 8 miles wide. It was one of the most productive marshes in North America. As with many marshes its importance went unrecognized and by 1911 all but 100 acres had been drained.

In 1937 the 6,432-acre refuge was established with development aimed at restoring a part of the marsh. The success of this restoration is apparent each fall and spring when waterfowl fill the sky.

WILDLIFE

Montezuma's varied habitats provide food and cover for numerous birds, mammals, and fish. A total of 282 species of birds have been seen. Canada geese, mallards, wood ducks, teal, and other birds nest on the refuge. The largest concentrations of waterfowl occur during migration. Peak populations have reached 140,000 Canada geese in April and 150,000 ducks in October.

Besides waterfowl, there are many species of herons, shorebirds, terns, songbirds at Montezuma. White-tailed deer are common and easily seen at dawn and dusk. Woodchucks are abundant along dikes.

By 1980, bald eagles in New York had declined to one breeding pair. A program to re-establish a nesting population by releasing young birds in the wild was begun at Montezuma in 1976. Since that time, eagle populations have been recovering slowly.

Refuge marshes are excellent muskrat habitat. Muskrats use water plants for food and to construct their houses. Waterfowl need a mix of open water and vegetation for food and cover. Too many muskrats result in not enough cover, too few allow the plants to choke out the open water. Muskrats are managed to maintain marsh vegetation in a desirable condition for waterfowl.

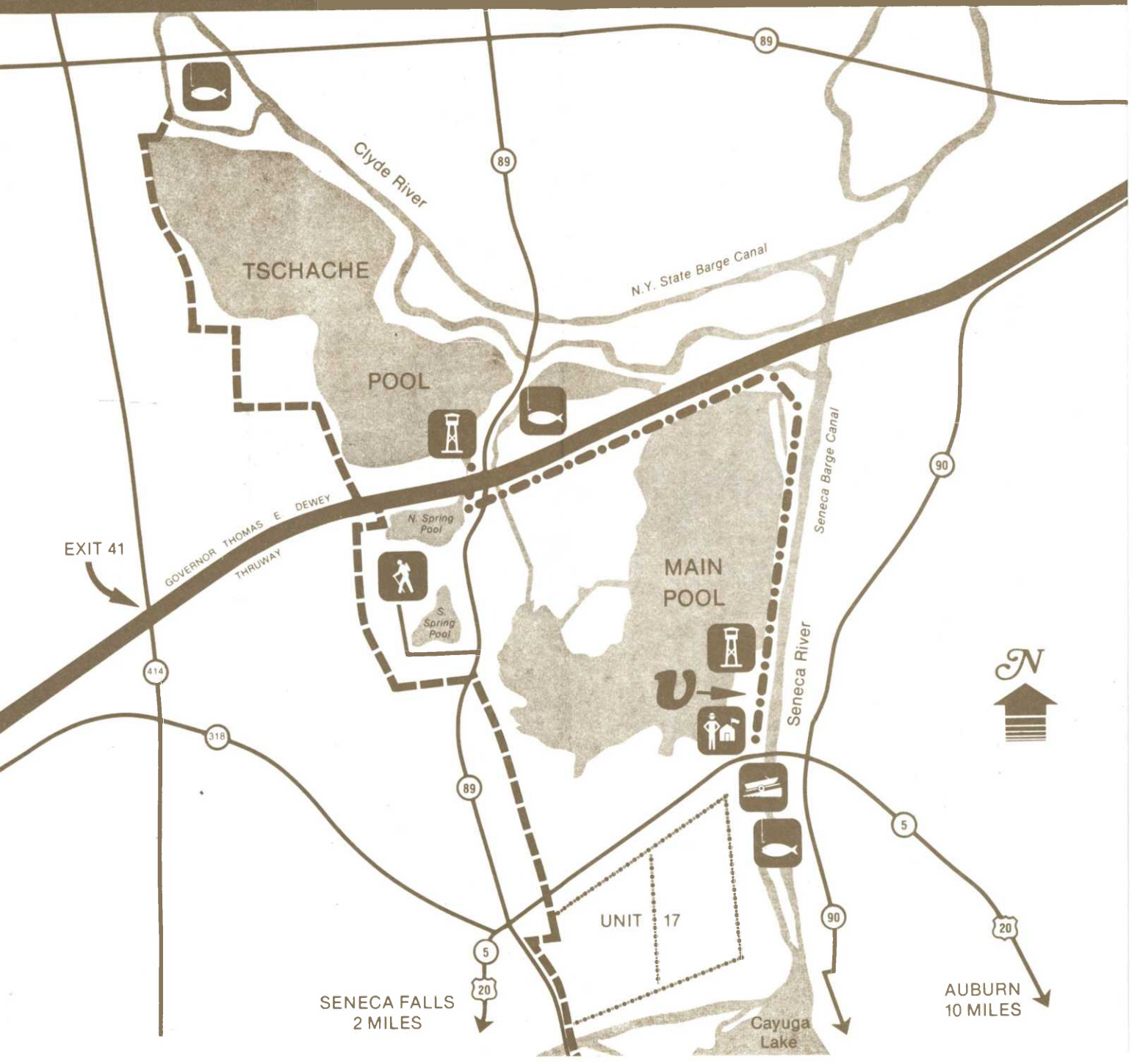
PUBLIC USE

Montezuma is open daily from sunrise to sunset. Visitors can enjoy a visitor contact station, self-guided auto tour route, two observation towers, and nature trail. The refuge also provides area teachers and students with an outdoor classroom environmental education.

Warm water fish are abundant in the canals and rivers surrounding the refuge. Popular species are the brown bullhead, northern pike, and walleye. There are three public fishing sites and a boat launch. When conditions warrant, hunting of waterfowl, deer, and upland game are allowed under special regulations.

MONTEZUMA
National Wildlife Refuge

BOUNDARY
AUTO TOUR
OFFICE
VISITOR AREA
TOWER
HIKING
FISHING
BOAT RAMP



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Seneca Falls, New York 13148
Telephone: (315) 568-5987

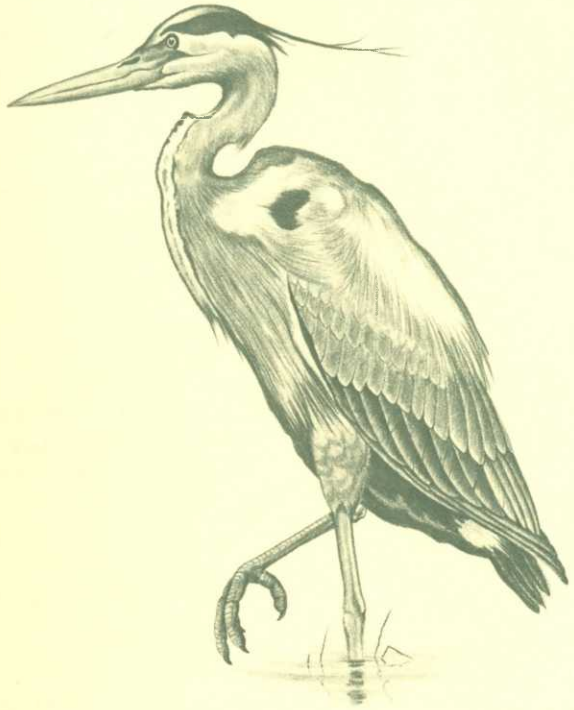
Montezuma is one of more than 400 refuges in the National Wildlife Refuge System, administered by the U.S. Fish and Wildlife Service. The Service also manages National Fish Hatcheries, and provides Federal leadership in habitat protection, fish and wildlife research, technical assistance, and conservation and protection of migratory birds, certain marine mammals, and threatened and endangered species.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

RL 52550-2
JULY 1985

BIRDS of Montezuma

National Wildlife Refuge



New York

MONTEZUMA NATIONAL WILDLIFE REFUGE in Seneca County, New York, was established in 1937 to provide nesting, resting, and feeding areas for ducks, geese, and many other water birds and songbirds. This Refuge contains 6,432 acres of widely diversified habitat, from extensive marshes to upland hardwoods. In addition to meeting habitat requirements for tens of thousands of spring and fall migrant birds, the refuge annually provides wildlife education and recreation to a quarter of a million visitors.

Public uses include a 3.5 mile self-guiding auto tour around the Main Pool, a Visitor Contact Station, a 2-mile hiking trail and ample opportunities to photograph wildlife.

Birding opportunities are best from March through November with peak migrations of waterfowl in mid-April and early October. Warblers are abundant in late May to early June. Summer nesters and broods provide excellent viewing — there is always something to see on a birding tour.

This folder lists 314 species of birds that have been identified on Montezuma Refuge since its establishment in 1937. Please report any sightings of birds that are not included in this list to the Refuge Manager.

Most birds are migratory; their seasonal occurrence is coded as follows:

SEASON

s - Spring	March - May
S - Summer	June - August
F - Fall	September - November
W - Winter	December - February

† - Nesting has occurred on the refuge.

RELATIVE ABUNDANCE

a - abundant	a species which is very numerous.
c - common	certain to be seen or heard in suitable habitat
u - uncommon	present, but not certain to be seen.
o - occasional	seen only a few times during a season.
r - rare	seen at intervals of 2 to 5 years.

		s	S	F	W
LOONS - GREBES - CORMORANT					
___	Red-throated Loon	r			
___	Common Loon	o		o	
___	Pied-billed Grebe†	c	c	c	
___	Horned Grebe	o		o	
___	Red-necked Grebe	r		r	
___	Double-crested Cormorant	o	c	c	
BITTERNS - HERONS - IBIS					
___	American Bittern†	o	c	c	
___	Least Bittern†	o	o	o	
___	Great Blue Heron†	c	c	c	o
___	Great Egret	o	c	o	
___	Snowy Egret		r		
___	Little Blue Heron		r	r	
___	Cattle Egret	r			
___	Green-backed Heron†	o	c	o	
___	Black-crowned Night-Heron†	o	c	c	
___	Glossy Ibis	r	r		
SWANS - GEESE - DUCKS					
___	Tundra Swan	o		r	o
___	Mute Swan	o		o	
___	Snow Goose	c		o	
___	Brant			o	
___	Canada Goose†	a	c	c	c
___	Wood Duck†	c	c	c	
___	Green-winged Teal†	c	o	c	
___	American Black Duck†	a	c	a	o
___	Mallard†	a	c	a	o
___	Northern Pintail†	c	o	c	
___	Blue-winged Teal†	c	c	c	
___	Northern Shoveler†	c	o	c	
___	Gadwall†	c	c	c	
___	Eurasian Wigeon	r		r	
___	American Wigeon†	c	o	c	
___	Canvasback†	c	o	c	
___	Redhead†	c	o	c	
___	Ring-necked Duck	c	o	c	
___	Greater Scaup	c		c	
___	Lesser Scaup	o	o	o	
___	Oldsquaw	o		o	
___	Black Scoter	r		r	
___	Surf Scoter	r		r	
___	White-winged Scoter	r		r	
___	Common Goldeneye	c		c	
___	Bufflehead	c		c	
___	Hooded Merganser†	c	o	a	o
___	Common Merganser	a	o	a	c
___	Red-breasted Merganser	o	r	o	
___	Ruddy Duck†	o		o	
VULTURES - HAWKS - FALCONS					
___	Turkey Vulture	c	c	c	c
___	Osprey†	c	c	c	
___	Bald Eagle	o	o	o	o
___	Northern Harrier†	o	o	o	o
___	Sharp-shinned Hawk†	o	o	o	o
___	Cooper's Hawk	o	o	o	o
___	Northern Goshawk	o	o	o	
___	Red-shouldered Hawk	o		o	
___	Broad-winged Hawk	o		o	
___	Red-tailed Hawk†	c	c	c	c
___	Rough-legged Hawk			o	c
___	Golden Eagle		o	o	
___	American Kestrel†	c	c	c	o
___	Merlin	r		r	
___	Peregrine Falcon	r		r	
PHEASANT - GROUSE					
___	Ring-necked Pheasant†	u	u	u	u
___	Ruffed Grouse†	u	u	u	u
RAILS - CRANES					
___	King Rail	r	r	r	
___	Virginia Rail†	c	c	c	r
___	Sora†	c	c	c	
___	Common Moorhen†	c	c	c	
___	American Coot†	c	c	c	
PLOVERS - SANDPIPERS					
___	Black-bellied Plover	o	o	o	
___	Lesser Golden-Plover	r	o	o	
___	Semipalmated Plover	o	c	c	
___	Killdeer†	c	c	c	
___	Greater Yellowlegs	c	c	c	
___	Lesser Yellowlegs	c	c	c	
___	Solitary Sandpiper	r	o	o	
___	Spotted Sandpiper†	c	c	c	
___	Upland Sandpiper		r		
___	Whimbrel	r		r	
___	Hudsonian Godwit		r	o	
___	Ruddy Turnstone	o	o	o	
___	Red Knot	r	r	r	
___	Sanderling	r	r	r	
___	Semipalmated Sandpiper	c	c	c	
___	Western Sandpiper		r	r	
___	Least Sandpiper	c	o	c	
___	White-rumped Sandpiper	o	o	o	
___	Baird's Sandpiper			r	o
___	Pectoral Sandpiper	c	c	c	

	s	S	F	W
___ Dunlin	c		c	
___ Stilt Sandpiper	o	c	c	
___ Ruff		r	r	
___ Short-billed Dowitcher	c	o	c	
___ Long-billed Dowitcher			c	
___ Common Snipe†	o	o	o	
___ American Woodcock†	o	o	o	
___ Wilson's Phalarope	r	r		
___ Red-necked Phalarope	r	o	o	
GULLS - TERNS				
___ Bonaparte's Gull	o	o	o	
___ Ring-billed Gull	c	c	c	o
___ Herring Gull	c	o	c	c
___ Great Black-backed Gull	o	o	o	u
___ Caspian Tern	o		o	
___ Common Tern†	o	o	o	
___ Black Tern†	o	o	o	
DOVES - CUCKOOS - OWLS				
SWIFTS - HUMMINGBIRDS				
___ Rock Dove†	o	o	o	o
___ Mourning Dove†	c	c	c	o
___ Black-billed Cuckoo†	o	o		
___ Yellow-billed Cuckoo†	o	o		
___ Common Barn-Owl	r	r	r	r
___ Eastern Screech-Owl†	c	c	c	
___ Great Horned Owl†	c	c	c	c
___ Snowy Owl				r
___ Barred Owl†	r	r	r	r
___ Short-eared Owl	o	r	o	o
___ Northern Saw-whet Owl	r		r	r
___ Common Nighthawk		r		
___ Whip-poor-will	r			
___ Chimney Swift†	o	o		
___ Ruby-throated Hummingbird†		o		
___ Belted Kingfisher†	c	c	c	o
WOODPECKERS - FLYCATCHERS				
___ Red-bellied Woodpecker†	o	o	o	o
___ Yellow-bellied Sapsucker	o		o	
___ Downy Woodpecker†	c	c	c	c
___ Hairy Woodpecker†	o	o	o	o
___ Northern Flicker†	c	c	c	o
___ Pileated Woodpecker†	o	o	o	o
___ Olive-sided Flycatcher	r		r	
___ Eastern Wood-Pewee†		c		
___ Alder Flycatcher	o	o		
___ Willow Flycatcher	o	c		
___ Least Flycatcher†		c		
___ Eastern Phoebe†	c	c	c	
___ Great Crested Flycatcher†	o	c		
___ Eastern Kingbird†	c	c	o	
LARKS - SWALLOWS - JAYS and CROWS				
___ Horned Lark†	o	o	o	o
___ Purple Martin†	c	c		
___ Tree Swallow†	c	c	c	r
___ Northern Rough-winged Swallow	o	o		
___ Bank Swallow†	c	c		
___ Cliff Swallow†	r	r		
___ Barn Swallow†	c	c	c	
___ Blue Jay†	c	c	c	c
___ American Crow†	c	c	c	o
TITMICE - NUTHATCHES - WRENS				
___ Black-capped Chickadee†	c	c	c	c
___ Tufted Titmouse	o	o	o	
___ Red-breasted Nuthatch†	o		o	r
___ White-breasted Nuthatch†	c	c	c	c
___ Brown Creeper†	o	o	o	o
___ Carolina Wren	r	r	r	
___ House Wren†	c	c		
___ Winter Wren†	c	c	c	
___ Sedge Wren†	r	r		
___ Marsh Wren†	c	c	c	
KINGLETS - THRUSHES - THRASHERS				
___ Golden-crowned Kinglet	c		c	
___ Ruby-crowned Kinglet	c		c	
___ Blue-gray Gnatcatcher	o		o	
___ Eastern Bluebird†	u	u	u	r
___ Veery†	c	c	o	
___ Gray-cheeked Thrush	o		o	
___ Swainson's Thrush	o		o	
___ Hermit Thrush	c		c	
___ Wood Thrush†	c	c	o	
___ American Robin†	c	c	c	o
___ Gray Catbird†	c	c	c	
___ Northern Mockingbird	r	r		
___ Brown Thrasher†	o	o	o	
WAXWINGS - SHRIKES - STARLING				
___ Water Pipit	c		c	
___ Cedar Waxwing†	o	o	o	o
___ Northern Shrike				o
___ Loggerhead Shrike†	r		r	
___ European Starling†	a	a	a	o
VIREOS - WOOD WARBLERS				
___ Solitary Vireo	o		o	
___ Yellow-throated Vireo†	o	o		
___ Warbling Vireo†	c	c	c	
___ Philadelphia Vireo	r		r	

		s	S	F	W
___	Red-eyed Vireo†	c	c	c	
___	Blue-winged Warbler	r			
___	Golden-winged Warbler	o	o		
___	Tennessee Warbler	o		o	
___	Orange-crowned Warbler	r			
___	Nashville Warbler	c		c	
___	Northern Parula	o		o	
___	Yellow Warbler†	c	c	c	
___	Chestnut-sided Warbler	o		o	
___	Magnolia Warbler	c		c	
___	Cape May Warbler	c		c	
___	Black-throated Blue Warbler	c		c	
___	Yellow-rumped Warbler	c		c	
___	Black-throated Green Warbler	c		c	
___	Blackburnian Warbler	c		c	
___	Pine Warbler	o		o	
___	Prairie Warbler	o		o	
___	Palm Warbler	o		o	
___	Bay-breasted Warbler	o		o	
___	Blackpoll Warbler	c		c	
___	Cerulean Warbler†	c	o	c	
___	Black-and-white Warbler	c	o	c	
___	American Redstart†	c	c	c	
___	Prothonotary Warbler†	o	o		
___	Ovenbird†	c	c	c	
___	Northern Waterthrush	o	o	o	
___	Louisiana Waterthrush	o	o	o	
___	Connecticut Warbler	r		r	
___	Mourning Warbler	o	o	o	
___	Common Yellowthroat†	c	c	c	
___	Hooded Warbler	r		r	
___	Wilson's Warbler	o		o	
___	Canada Warbler	c		o	
___	Yellow-breasted Chat	r	r		
TANAGERS - SPARROWS					
___	Scarlet Tanager†	c	o	o	
___	Northern Cardinal†	c	c	c	c
___	Rose-breasted Grosbeak†	c	c	c	
___	Indigo Bunting†	c	c		
___	Rufous-sided Towhee†	c	o	c	
___	American Tree Sparrow			c	c
___	Chipping Sparrow†	c	c	c	
___	Field Sparrow†	c	c	c	o
___	Vesper Sparrow†	o	o	o	
___	Savannah Sparrow†	o	o	o	
___	Grasshopper Sparrow†	o	o	o	
___	Henslow's Sparrow†	o	o	o	
___	Fox Sparrow	c		c	

		s	S	F	W
___	Song Sparrow†	c	c	c	o
___	Lincoln's Sparrow	o		o	
___	Swamp Sparrow†	c	c	c	
___	White-throated Sparrow	c		c	
___	White-crowned Sparrow	c		c	
___	Dark-eyed Junco	o	o	o	
___	Lapland Longspur				o
___	Snow Bunting				o
BLACKBIRDS - FINCHES					
___	Bobolink†	o	o	c	
___	Red-winged Blackbird†	a	a	a	o
___	Eastern Meadowlark†	c	c	c	o
___	Rusty Blackbird	o		o	
___	Common Grackle†	a	a	a	o
___	Brown-headed Cowbird†	c	c	a	o
___	Northern Oriole†	c	c	c	
___	Purple Finch†	c	o	c	o
___	House Finch†	o	o	o	o
___	Common Redpoll				r
___	Pine Siskin				r
___	American Goldfinch†	c	c	c	o
___	Evening Grosbeak	r		r	r
___	House Sparrow†	c	c	c	c

NOTES

Location _____

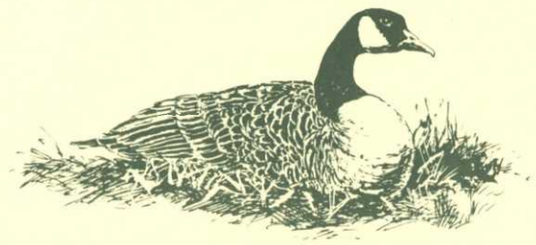
Date _____ Total _____

Observers _____

Weather _____ Wind _____

Time _____

Comments _____



The following is a list of accidental species that have been recorded only once or twice on the Montezuma National Wildlife Refuge.

Western Grebe
Eared Grebe
Leach's Storm Petrel
Wilson's Storm Petrel
American White Pelican
Northern Gannet
Black Swan
Pink-footed Goose
White-fronted Goose
Bar Headed Goose
Egyptian Goose
Cinamon Teal
Shelduck
Fulvous Whistling-Duck
Barrow's Goldeneye
King Eider
Red-crested Pochard
Masked Duck
Gyrfalcon
Turkey
Northern Bobwhite
Tricolored Heron
Yellow-crowned Night-Heron
White Ibis
Greater Flamingo
Greater Sandhill Crane
Yellow Rail
Black Rail
Purple Gallinule
American Avocet
Black-necked Stilt
Northern Lapwing
Piping Plover
Marbled Godwit
Buff-breasted Sandpiper
Red Phalarope
Parasitic Jaeger
Glaucous Gull
Iceland Gull
Little Gull
Least Tern
Arctic Tern
Roseate Tern
Forster's Tern
Gull-billed Tern
Razorbill
Thick-billed Murre
Dovekie
Black Guillemot
White-winged Dove
Long-eared Owl
Scissor-tailed Flycatcher
Western Kingbird
Say's Phoebe
Yellow-bellied Flycatcher
Acadian Flycatcher
Gray Jay
Common Raven
Boreal Chickadee
Sprague's Pipit
Bohemian Waxwing
Yellow-headed Blackbird
Brewer's Blackbird
Boat-tailed Grackle
Blue Grosbeak
Pine Grosbeak
European Goldfinch
White-winged Crossbill
Dickcissel
Sharp-tailed Sparrow
Lark Sparrow
Clay-colored Sparrow

ENVIRONMENTAL EDUCATION FILM LENDING LIBRARY

MONTEZUMA NATIONAL WILDLIFE REFUGE
3395 ROUTE 5/20 EAST
SENECA FALLS, NY 13148-9778
(315) 568-5987

1. Keepers of Wildlife, 21 minutes (I, J, H, A)
2. To Strike A Balance, 30 minutes (J, H, A)
3. So Little Time, 29 minutes (J, H, A)
4. Watching Wild Wings, 29 minutes (H, A)
5. Steel Shot - A Closer Look, 15 minutes (H, A)
6. Age of Alaska, 25 minutes (H, A)
7. Winter Story of Survival, 14 minutes (P, I, J)
8. Patterns of the Wild, 27 minutes (I, J, H, A)
9. Still Waters (Music only, no narrative), 14 minutes (J, H)
10. Canada Goose (Biology), 15 minutes (J, H)
11. This Is A Mallard (Biology), 33 minutes (J, H)
12. Ecology of Ponds, 7 minutes (P, I, J)
13. Eyes, 14 minutes (I, J, H, A)
14. Wild Animals Adapt, 9 minutes (P, I)
15. Wild Animals Catch Fish, 9 minutes (P, I)
16. "Mammals", "Fish", "Amphibians", "Reptiles", "Birds"*
17. America's Wetlands, 25 minutes (J, H, A)
18. Let The Real World Work For You, 18 minutes (J, H, A)
19. At The Crossroads, 25 minutes (J, H, A)
20. Wildlife, Wetlands, and You - The Duck Stamp Story, 15 minutes (I, J, H, A)
21. Strange and Unusual Animals - Adaptations To Environment, 10 minutes (P, I)
22. World In A Marsh, 20 minutes (P, I, J, H, A)
23. Black Duck I.D., 7 minutes (J, H, A)

24. The Red Fox; A Predator, 9 minutes (P, I)

25. Predators And Prey, 9 minutes (P, I)

26. Preparing For Winter, 9 minutes (P)

27. Wanted Alive, 9 minutes (P, I, J)

28. Sand County Almanac, 18 minutes (J, H, A)

29. Red-Tailed Hawk - Bird of Prey, 10 minutes (P, I, J, H)

30. Raptors: Birds of Prey, 14 minutes (I, J, H)

31. Flight of Birds, 13 minutes (P, I, J, H)

32. Animal Migration, 15 minutes (P, I, J)

33. Land Pollution: A First Film, 15 minutes (I, J, H)

34. Animal Adaptations In A Northern Environment, 12 minutes (P, I, J)

35. America's National Wildlife Refuge System, 10 minutes (P, I, J, H, A)

36. Field Testing Steel Shot, 30 minutes (H, A)

37. Lead Poisoning In Waterfowl, 25 minutes (J, H, A)

38. We Care About Oceans (National Wildlife Federation Slide/Tape Program), 9 minutes (I, J, H, A)

39. Wildlife And People: Building Bridges (Slide Program), 15 minutes (H, A)

40. Where The Fish Will Be (Slide Program), 10 minutes (J, H, A)

41. Endangered Species (Slide Program), 12 minutes (J, H, A)

AGE GROUP LEVEL:

P - Kindergarten - 4th Grade
I - 5th - 6th Grade
J - 7th - 8th Grade
H - 9th - 12th Grade
A - Adult

* Number 16 is a series ("All About Animals") for the primary grades. Each film is 10 minutes long, and may be shown in any sequence.

NOTE: This is a free service for non-profit organizations. Films will be mailed on Monday of the week requested to an individual who will be responsible for returning them no later than 5 days after receiving them. Return postage must be paid for by the person or organization requesting the film. Certified mail is requested. Multiple requests for a film will be handled on a first come, first served basis. To request a film, write the Outdoor Recreation Planner, Montezuma National Wildlife Refuge, 3395 Route 5/20 East, Seneca Falls, NY 13148-9778.

MONTEZUMA NATIONAL WILDLIFE REFUGE
3395 ROUTE 5/20 EAST
SENECA FALLS, NEW YORK 13148

WATERFOWL HUNTING REGULATIONS

WATERFOWL HUNTING ON THE MONTEZUMA NATIONAL WILDLIFE REFUGE IS PERMITTED IN ACCORDANCE WITH STATE AND FEDERAL REGULATIONS AND THE ADDITIONAL RESTRICTIONS LISTED BELOW:

HUNTING DATES

Specific dates for hunting ducks and geese on Montezuma will be the same as the first half of the New York State WESTERN ZONE season for ducks. Goose hunting on the refuge will not open prior to start of the duck season.

Hunting will be on Tuesdays, Thursdays, and Saturdays from the opener until the first half ends or until the pool freezes over--whichever comes first.

RESERVATION PROCEDURES

All reservations will be handled by telephone. All reservations are on a first-come first serve basis. The reservation number is (315) 568-4136.

Telephone reservations will be accepted at this number only between the hours of 8 a.m. and 12 noon local time on Tuesdays, Thursdays, and Saturdays during weeks when refuge hunts are in progress.

Reservations will be accepted for the immediate next refuge hunt day (e.g., call in Thursday between 8 a.m. and 12 noon for hunt on Saturday; call in on Saturday for following Tuesday hunt, etc.).

For the refuge's season opener, reservations will be taken between 8 a.m. and 12 noon by telephone on the day which precedes the hunt. Note that this is the case only for the season's opener; thereafter, the Tuesday/Thursday/Saturday, 8 a.m. to 12 noon schedule for call-ins will be in effect. In every case, the (315) 568-4136 number must be used.

Reservations will be accepted on an individual basis only (no multiple reservations). Persons with reservations may bring one companion.

The successful applicant and his/her companion must sign-in at least one-half hour before legal shooting time. Failure to appear will cause forfeiture of the reservation. Reservations are non-transferable.

To maximize opportunity, an individual hunter will be granted only one (1) reservation per hunt week (Tuesday/Thursday/Saturday) for the first two (2) weeks of the season. This does not apply to the standby system.

Reservations unfilled or unclaimed by one-half hour before legal shooting time will be available on a standby, lottery basis at the Check Station. All regulations applicable to reservation hunters will apply to standby hunters.

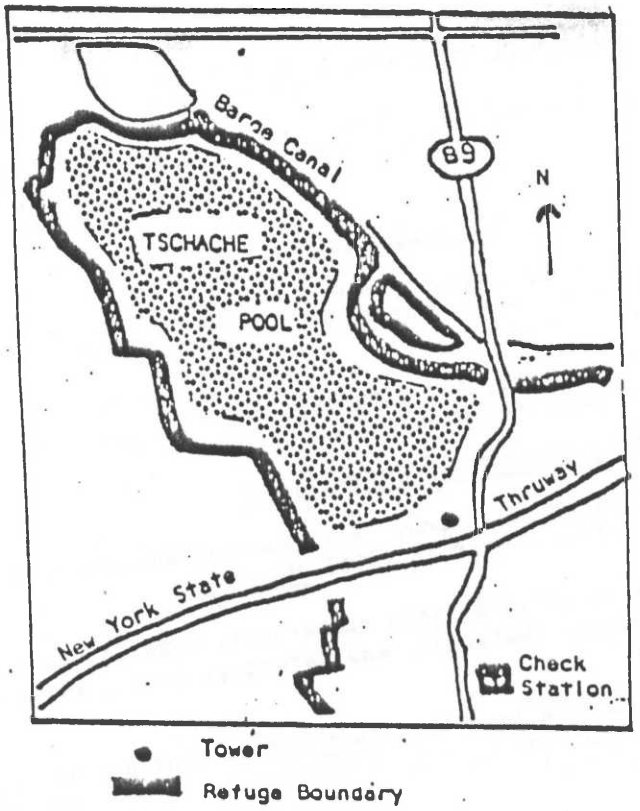
ADDITIONAL REGULATIONS

Boats are required (provide own boat); motors prohibited. Hunter selects own site in this free-roam system--camouflaged boats/canoes recommended. Use of well-trained retrievers encouraged.

Each hunter is limited to 25 steel shot shells

Hunting ends each day at 12 noon local time. All hunters, successful or unsuccessful, must check-out at the Check Station on Route 89 by 1 p.m. local time.

Successful completion of the New York State Waterfowl Hunter Identification Course is required to hunt on the refuge. It is the hunter's responsibility to provide proof of completion upon request. Hunters interested in taking the New York State Identification Course should contact their closest New York State Department of Environmental Conservation office for further details.



DIRECTIONS TO MONTEZUMA REFUGE'S CHECK STATION

Take thruway to Exit 41.

Turn right onto Route 414; continue to first stoplight (or caution light).

Turn left onto Route 318; travel to end (about 4 miles) to Route 5/20.

Turn left onto Route 5/20.

Turn left onto Route 89 (going north).

Travel 1.7 miles to Check Station (Check Station on your right).

REMEMBER . . .

- Waterfowl hunting permitted on reservation basis only. Reservations issued by "phone-in" system only (315-568-4136).
- Hunt days Tuesdays, Thursdays, and Saturdays only.
- Daily check in one-half hour before legal shooting time.
- Hunting ends at 12 noon local time; must check out by 1 p.m. local time.
- Blinds not provided - Portable blinds permitted.
- Steel shot only, not larger than #1 fine shot.
- New York State Waterfowl Identification Course required by all hunters.

For additional INFORMATION only, write: Montezuma National Wildlife Refuge
3395 Route 5/20 East
Seneca Falls, New York 13148

For RESERVATIONS only, call: (315) 568-4136.

DEER HUNTING (BOW ONLY)

Deer will be hunted with bow and arrow commencing on the first weekday of the legal state archery season and extending through the end of the second archery season. The entire refuge, with the exception of open water areas, closed areas around headquarters, subheadquarters, and the Esker Brook Nature Trail area, will be open to archery hunting of deer Monday through Friday. The Friday and Saturday following Thanksgiving, the entire refuge will be open to archery hunting, with the exception of open water areas. Throughout these two days, the refuge will be closed to all other uses. Saturday hunting will be allowed commencing the first Saturday after Thanksgiving and extending through the second archery season. NO PRE-SEASON SCOUTING ALLOWED.

ALL HUNTERS, on each hunt day, must pick up, possess, and return at day's end a valid refuge permit card. Permit cards will be dispensed from self-service check stations located at the refuge headquarters on Routes 5/20 and subheadquarters on Highway 89. Each hunter must provide the following information: (1) name, address, telephone number; (2) Is this the first time you have deer hunted on the refuge this year? (3) vehicle license number; and (4) deer kill report (success, sex, animals crippled/unretrieved, number of antlers). For the first two hunt days, Thanksgiving Day, the Friday and Saturday following Thanksgiving, and the remaining Saturdays, successful hunters must check their deer in at the deer biological check station located at sub-headquarters.

For those wishing to hunt opening day, a permit will be required. Only 600 permits will be issued. A lottery system will be used to issue permits. Hunters should mail a 3 1/2" x 5 1/2" post card to the refuge with the following information: Last Name, First Name, MI (Jr., Sr., I, II, etc., must be included), Street Address or Box Number, City, State, Zip Code, Telephone Number, Hunter's Signature, and Hunting License Number.

Post cards will be accepted from September 1 through September 21. A public drawing will be held the next day at 10:00 a.m. ONLY ONE POST CARD PER APPLICANT. Successful applicants should report to the Refuge Visitor Center, located on Rt. 5/20, or to the Hunter Check Station on Highway 89 on opening day. Except for opening day and November 27 and 28, for the remainder of the season, the daily self-service permit card system will be in effect. On November 27 and 28, all hunters must check in at the Visitors Center or subheadquarters prior to hunting.

New York State Regulations apply to the taking of deer of either sex; antlerless deer may be taken during the portion of the refuge hunt that falls within the dates of the state-wide archery season. Antlered deer ONLY (unless the archer possesses a New York State DMU-86 Permit) may be taken during the state-wide gun season portion of the refuge hunt. All hunters must "break down" or disassemble their bows by sunset, and must be off the refuge by dark.

Hunting Dates: October 15, 1987 - November 13, 1987; Buck or Doe
November 16, 1987 - December 8, 1987; Buck only unless you have a DMU-86 Permit.
December 9, 1987 - December 12, 1987; Buck or Doe

DESIGNATED RESIDENT SMALL MAMMAL HUNTING
(Shotguns Only - No Rifles)

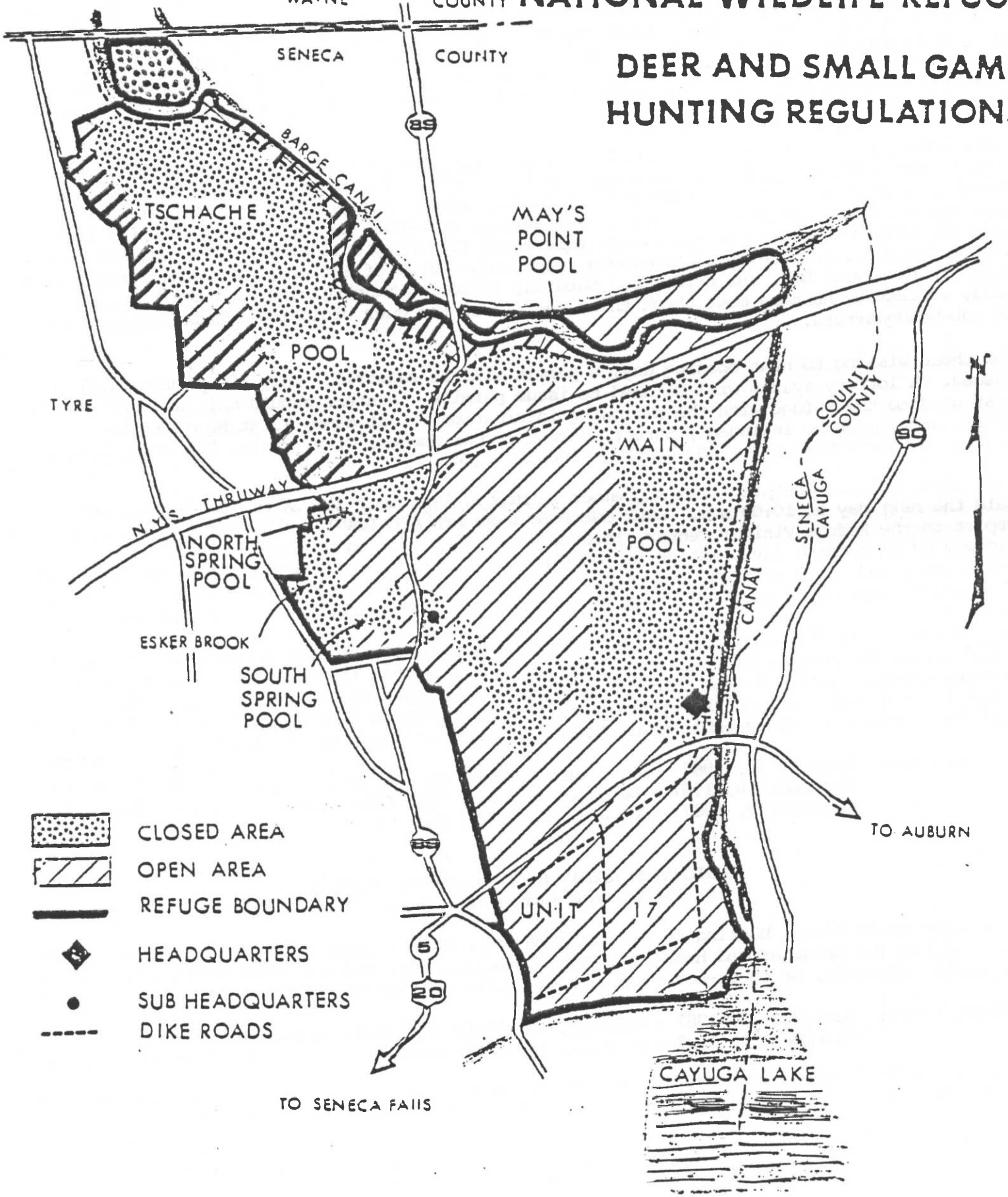
Designated small mammal hunting is permitted on the entire refuge, with the exception of water areas and closed areas around Headquarters, Subheadquarters, and the Esker Brook Nature Trail. No permit, check-in, or check-out is required. BIRDS MAY NOT BE HUNTED.

Hunting Dates: December 13, 1987 - February 29, 1988; Squirrel and Rabbit
December 13, 1987 - February 14, 1988; Raccoon and Fox (daylight hours only)

FOR FURTHER INFORMATION CONCERNING APPLICABLE REGULATIONS, PLEASE CONTACT: Montezuma National Wildlife Refuge, 3395 Route 5/20 East, Seneca Falls, NY 13148-9778; PHONE (315) 568-5987.

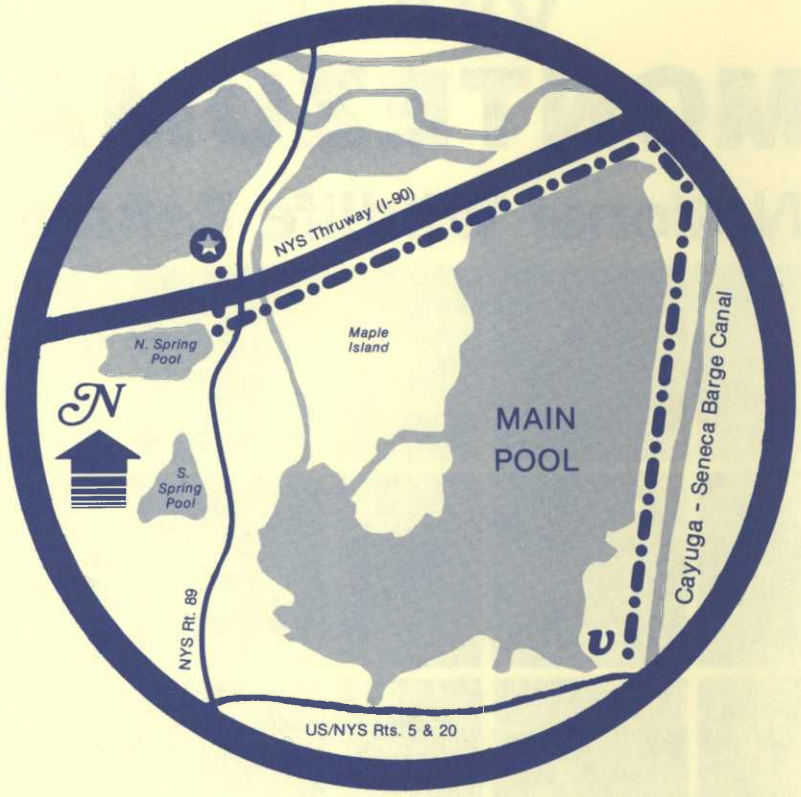
MONTEZUMA NATIONAL WILDLIFE REFUGE

DEER AND SMALL GAME HUNTING REGULATIONS



A Visit To MONTEZUMA National Wildlife Refuge

A REFUGE TOUR



AUTO TOUR VISITOR AREA OBSERVATION TOWER

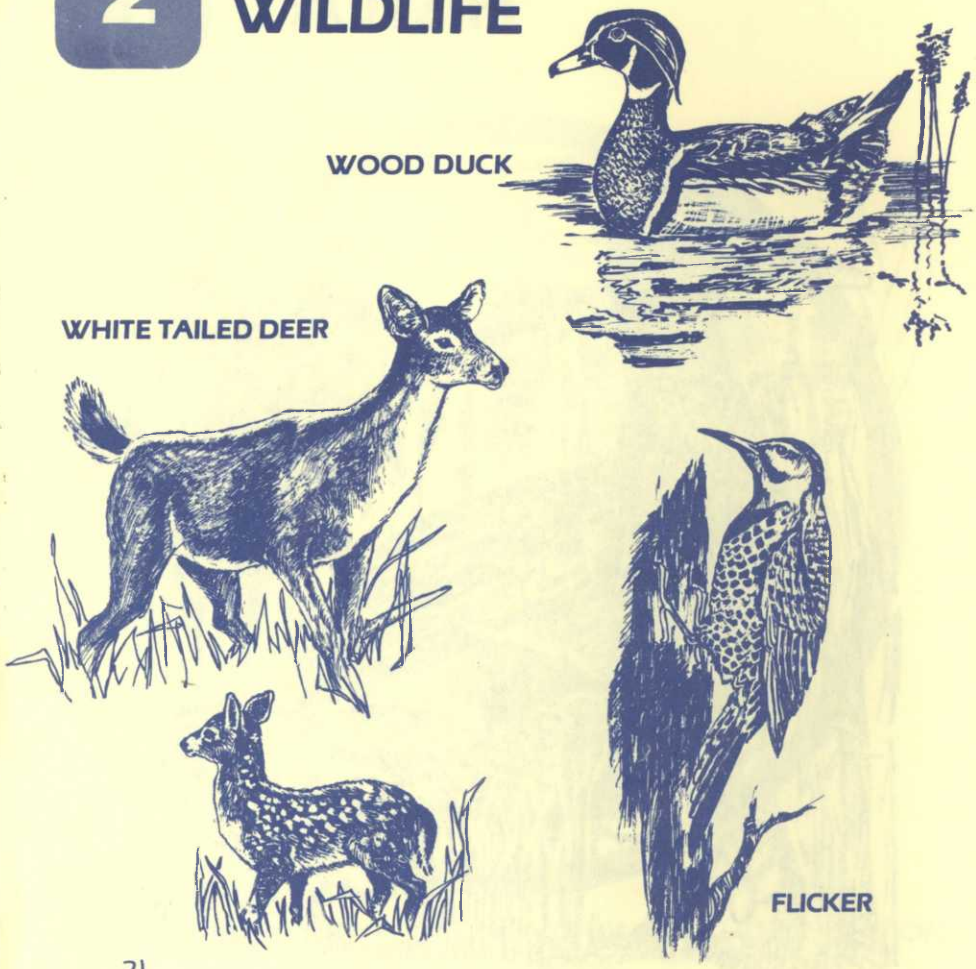
Welcome to Montezuma! This self-guided auto tour will take you 3.5 miles through the national wildlife refuge. Follow the numbered markers to the Observation Tower on Route 89. **PLEASE RETURN THIS GUIDE THERE.** Obey the 15 m.p.h. speed limit and drive safely. Remember, you are the guests of wildlife here; the refuge is their home!

MARSH HISTORY 1

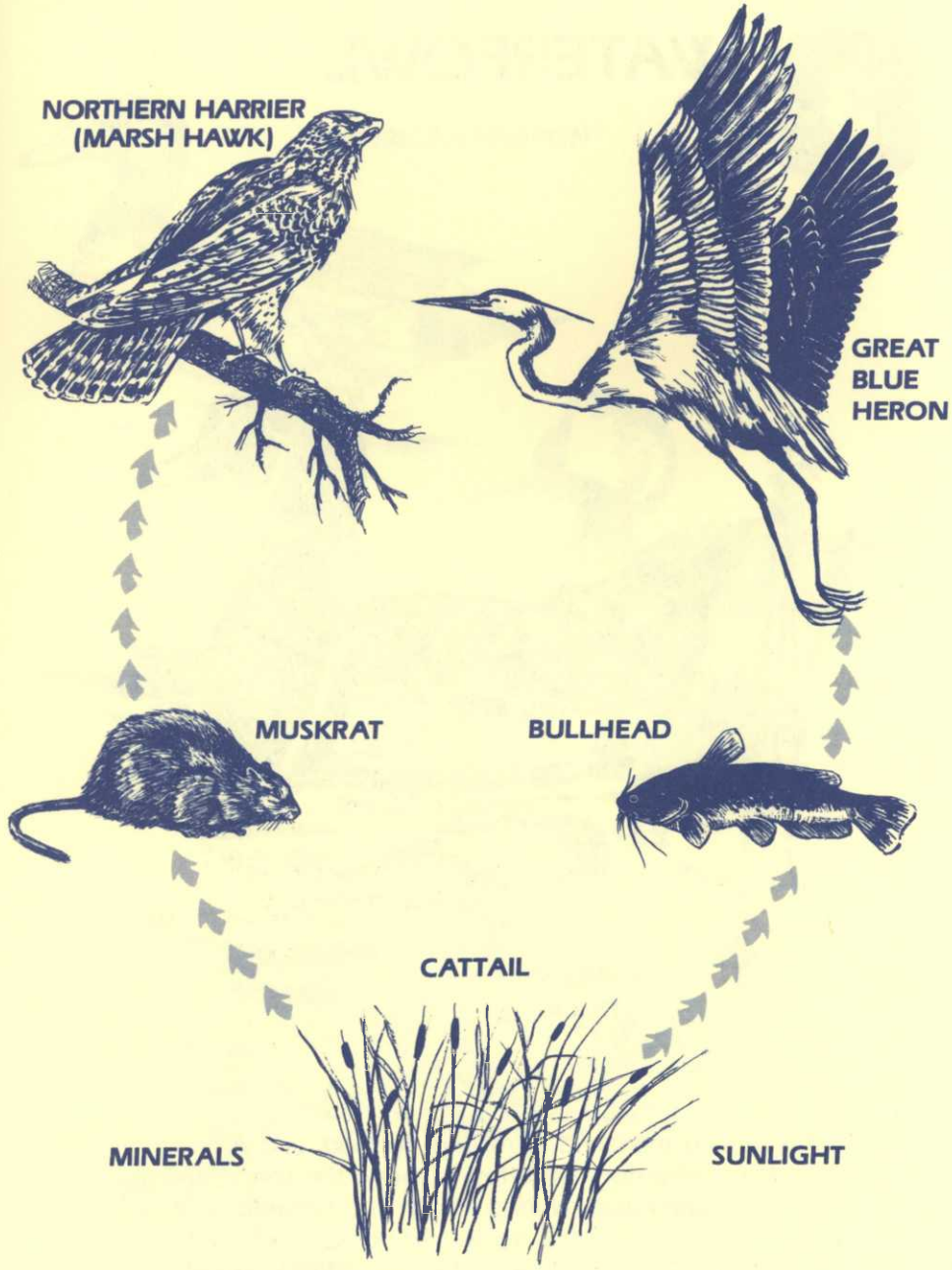
MALLARD

Before 1900, the Montezuma Marsh was one of the greatest freshwater marshes in North America. As with many wetlands, its importance was unrecognized and all but 100 acres were drained. The refuge has restored 5,085 acres. Wetlands are the only home for waterfowl and water birds. Wetlands prevent flooding, replenish ground water supplies and filter pollutants. Over half of our nation's wetlands have been lost to draining or filling.

2 VIEWING WILDLIFE



Food, water, shelter and space form **habitats** for wildlife. To see an animal you must first know its habitat requirements. Various types of waterfowl will be found in different parts of the marsh. The marsh hawk hunts over marshes and nearby fields. Deer feed at the edge of woods and marsh, disappearing at the first signs of danger.



Energy (food) flows through marsh food chains from one group of living organisms to another.

3 WATERFOWL

WOOD DUCK

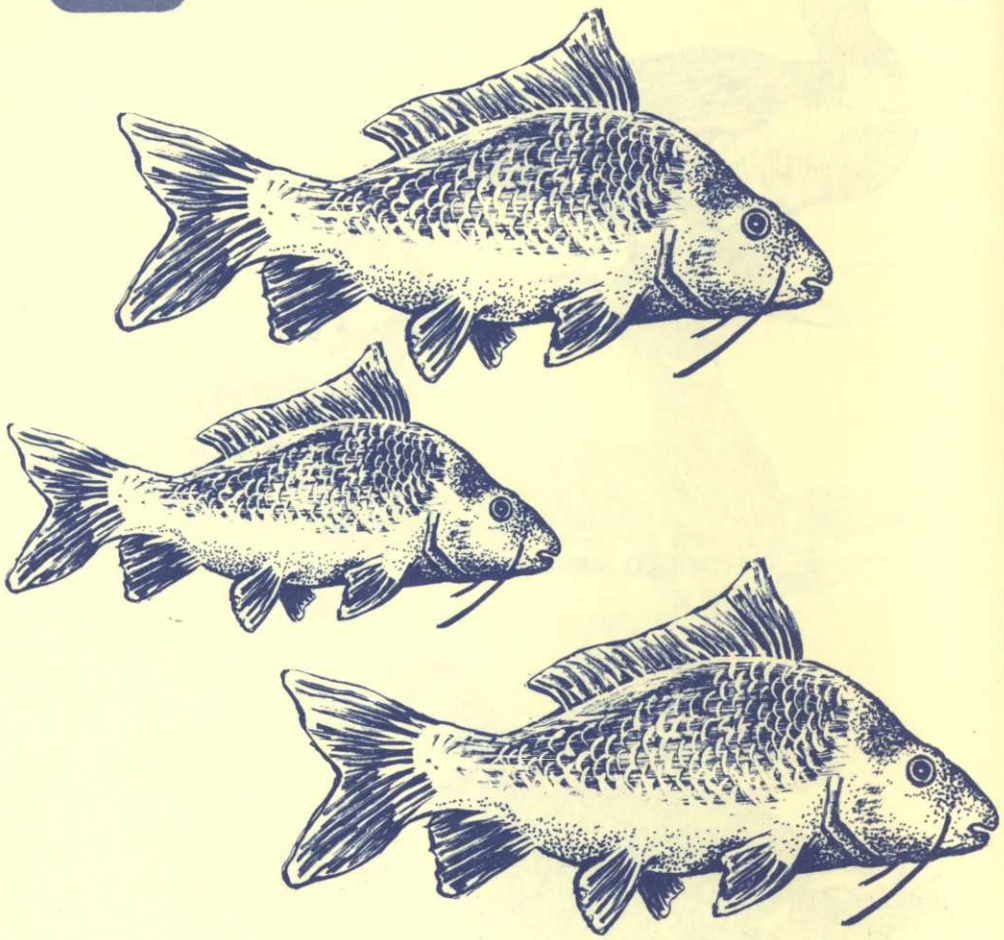
Montezuma is managed as resting, feeding, and nesting habitats for migratory waterfowl. During the spring and fall migrations, particularly during March and November, large concentrations of Canada geese and ducks can be seen on the refuge. Swans, the largest of all waterfowl, can also be observed. During migration you should visit late in the evening to watch large flocks returning from off-refuge feeding forays.

AMERICAN WIGEON

HOODED MERGANSER

CANADA GEESE

4 CARP & SPILLWAY



Water is the lifeblood of the refuge. This water control structure allows water levels to be managed for the benefit of many types of wildlife. In spring, the release of water attracts large numbers of carp from the canal. Carp are bottom feeders, stirring up mud and silt. This kills beneficial marsh plants by blocking out sunlight. Rotating and fixed screens keep carp from the marsh.

NESTING ISLAND 5

CANADA GOOSE & BROOD

In the area to your right artificial nesting islands have been built for waterfowl. Similar islands have been constructed at many refuge locations. During May through July, the water to your left is a good place to see waterfowl broods. You will often see Canada goose broods crossing this road.

6 PURPLE LOOSESTRIFE

In the summer you will see an abundance of purple flowers to your right and left. This is purple loosestrife. Loosestrife, like the carp, is an introduced species. It is not native and is of little importance to wildlife. Unfortunately, it spreads easily and chokes out more desirable marsh plants. The resulting loss of native habitats means that the marsh can no longer support the kinds and numbers of animals that it did before the introduction of loosestrife.

THRUWAY 7

On your right is the New York State Thruway. It was built across Montezuma in the 1950's. This is the connecting spillway. It allows water to flow into the main pool, to your left, from storage pools across the thruway.

8 SHOREBIRDS

The wetlands and mudflats to your left are excellent habitats for shorebirds, a diverse group of wading birds. The killdeer calls its name and draws intruders from its nest by feigning injury. Yellowlegs wade through the shallows on bright yellow legs. The snipe flies by in rapid zigzags close to cover. At night the woodcock probes the moist ground for food.

FLOODED FOREST 9

Directly before you is a flooded timber impoundment. Marsh habitat was needed more than forest and the area was flooded. You can see large concentrations of wigeon here in the spring, and mallards and teal in the fall. Note that the exotic plant, purple loosestrife, has formed colonies on top of each decaying stump. This is testimony to the adaptability of this undesirable exotic species.

10 TREE NESTING BIRDS

Most of the flooded timber in Tschache Pool has now fallen. However, careful observation of the remaining snags will reveal nesting by great blue herons. It is possible that an osprey nest can be found perched atop a dead snag. This pool is a favorite resting spot for visiting bald eagles.

PLEASE RETURN THIS BOOK HERE

U.S. FISH AND WILDLIFE SERVICE

Montezuma is one of more than 430 refuges in the National Wildlife Refuge System administered by the U.S. Fish and Wildlife Service. The National Wildlife Refuge System is a network of lands and waters managed specifically for the protection of wildlife and wildlife habitat and represents the most comprehensive wildlife resource management program in the world. Units of the system stretch across the United States from northern Alaska to the Florida Keys, and include small islands in the Caribbean and South Pacific. The character of the refuge is as diverse as the nation, itself.

The Service also manages National Fish Hatcheries, and provides Federal leadership in habitat protection, fish and wildlife research, technical assistance, and the conservation and protection of migratory birds, certain fish and marine mammals, and threatened and endangered species.

For more information contact:

Refuge Manager
Montezuma National Wildlife Refuge
3395 Rts. 5 & 20 East
Seneca Falls, New York 13148-9778
Telephone: (315) 568-5987

DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

RL-52550-4

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